

॥ ज्ञानस्य निर्मलं नेत्रं ज्योतिष्यकमनुत्तमम् ॥

# Jyotirvidya Parisanstha, Pune

(India's Oldest Amateur Astronomers' Association)

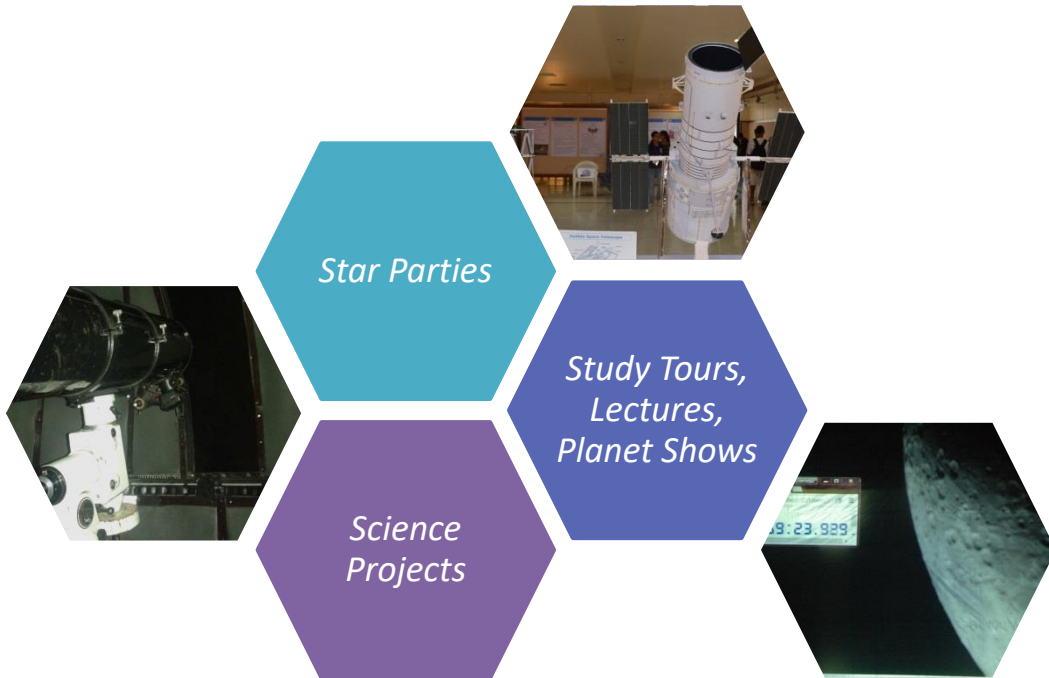
**Foundation: 22 August 1944; Ganesh Chaturthi, Shak 1866**



**Year: 2015-16**

**72<sup>nd</sup> Year**

## Annual Report



॥ ज्ञानस्य निर्मलं नेत्रं ज्योतिष्यकमनुत्तमम् ॥

**Jyotirvidya Parisanstha, Pune****2015-16 : 72<sup>nd</sup> Year****Annual Report (April 2015 – March 2016)**

The Governing Council of Jyotirvidya Parisanstha is very pleased to put forward annual report of 72<sup>nd</sup> year in the General Body Meeting. Parisanstha made good progress in this year and we thank all the members of the Parisanstha who made the programs a great success.

**Governing Council for the year 2014-15**

President	Mr. Mujtaba Lokhandwala
Vice Presidents	Mr. Aniruddha Deshpande Mr. Deepak Joshee
Secretary	Dr. Sagar Gokhale
Treasurer	Ms. Aparna Kinkar
Executive members	Mr. Prabhakar Khole Mr. Shailesh Tilak Dr. Amod Rairikar Mr. Sameer Godbole Mr. Parimal Dave Mrs. Ketaki Dave Mr. Amit Kadlaskar Mr. Milind Joshi Ms. Akanksha Devkar Mr. Ramchandra Karanje Mr. Atharva Pathak
Adopted member	Mr. Sarang Sahasrabuddhe

**Welcoming the new members**

In the year 2015-16, following number of people became members of Parisanstha:

Life Members: 38

Annual Members: 219

## WORK REPORT IN THE YEAR 2015-16

Parisanstha members successfully organized outreach programs as well made good progress in science projects. Members worked nicely on both the fronts.

### Star parties

As per yearly program, Parisanstha has organized monthly public star parties. The report of the same is as follows,

Date	Venue	Attendees
18 May 2015	Gadgil Farms, Yavat	149
17 October 2015	Abhyankar Farms, Near Nasarapur	95
7 November 2015	Abhyankar Farms, Near Nasarapur	55
5 December 2015	Abhyankar Farms, Near Nasarapur	134
9 January 2016	Abhyankar Farms, Near Nasarapur	130
6 February 2016	Abhyankar Farms, Near Nasarapur	158
13 February 2016	Abhyankar Farms, Near Nasarapur	100
12 March 2016	Abhyankar Farms, Near Nasarapur	104

In general, the outline of programs was as follows,

6.00 pm to 7.00 pm	Introduction and Tea
7.00 pm to 8.00 pm	Telescopic viewing of planets, galaxies or nebulae
8.00 pm to 9.30 pm	Unaided eye stargazing (Introduction to constellations, stars and Nakshatras, etc.)
9.30 pm to 10.30 pm	Dinner
10.30 pm to 11.30 pm	Astro-movies
11.30 pm to 00.30 am	Slide show / introduction to planetarium software
00.30 am to 1.30 am	Telescopic viewing of planets, galaxies or nebulae
1.30 am to 2.30 am	Unaided eye star gazing
2.30 am to 3.00 am	Telescopic viewing of planets, galaxies or nebulae
3.00 am to 4.00 am	Astrogames
4.00 am to 4.30 am	Tea
4.30 am to 5.30 am	Unaided eye stargazing and Telescopic viewing of planets etc.



All these programs were successfully organized with the help of following members: Mr. Sarang Sahasrabudhe, Ms. Aparna Kinkar, Mr. Aniruddha Deshpande, Mrs. Ketaki Dave, Mr. Omkar Gavali, Ms. Bhumika Radore, Mr. Atharva Pathak, Mr. Nilay Mokashi, Mr. Milind Joshi, Ms. Monika Gundecha, Ms. Isha Patankar, Ms. Harsha Kulkarni, Ms. Shruti Deshpande, Mr. Siddharth Birmal,

Mr. Sameer Godbole, Mr. Amit Kadlaskar, Mr. Ramchandra Karanje, Miss. Madhavi Patankar, Mr. Vishwajit Anjali, Mr. Sushen Joshi, Mr. Srujan Nandede, Ms. Rucha Nanivadekar, Mr. Shubham Kulkarni, Mr. Sujay Vaidya, Mr. Sumit Purohit, Ms. Akanksha Devkar, Ms. Amruta Pund.



In addition to these programs, following invitation star parties were conducted by Parisanstha:

Date	Invitee	Place	Attendance
4 April 2015	Roseland Residency	Pimple Soudagar	400
16 April 2015	"Fun and Friends" camp	Miraghar, Kamshet	25
22 April 2015	Unique Foundation	Mominpura, Guruwar Peth	120
23 April 2015	"Fun and Friends" camp	Miraghar, Kamshet	25
25 April 2015	Summer camp (Shree Krishnalini Kalaamanch)	Bhor	70
20 May 2015	Ms. Seema Johare	Gappangan, Sinhagad Base	80
20 May 2015	Padmavilas Society	Baner-Pashan Link Road	25
24 May 2015	Padmavilas Society	Sus Raod	40
8 June 2015	Marvel Izara, Nyati County	Marvel Izara, Nyati County	50
22 November 2015	Tech Mahindra	Hinjewadi	170
11 December 2015	City Park Society	Market Yard	60
18 December 2015	Air Force School	Viman Nagar	300
2 January 2016	Pune Adventurers	Sinhagad	70
19 January 2016	Art of Living	Jnana Prabodhini	40
20 January 2016	Garware College	Manjai-Asani, Tal. Velhe	50
10 February 2016	D. Y. Patil Institute of Engineering and Technology	Pimpri	100
21 February 2016	BGVS teachers' camp	Shikshak Bhavan, Navi Peth	20
28 February 2016	IUCAA's 'National Science Day' celebrations	IUCAA, SP Pune University	600
17 March 2016	D. Y. Patil Institute of Technology	Pimpri	100
13 March 2016	Mukta Pariwar	Naigaon, Near Nasarapur	65



Following members guided the participants in the invited star parties: Mr. Sarang Sahasrabudhe, Ms. Akansha Devkar, Mr. Atharva Pathak, Ms. Harsha Kulkarni, Ms. Monika Gundecha, Mr. Nilay Mokashi, Mr. Ramchandra Karanje, Ms. Shruti Deshpande, Mr. Shubham

Kulkarni, Mr. Sushen Joshi, Ms. Madhavi Patankar, Mr. Siddharth Birmal, Ms. Ketaki Dave, Ms. Ketaki Dave, Mr. Amit Kadlaskar.

All the invited Star Parties were managed well by Mr. Sarang Sahasrabudhe.



In the report year, Parisanstha procured two new Go-To type telescopes:

- National Geographic 90 GoTo Maksutov Cassegrain Telescope
- Celestron NexStar 127SLT Mak Computerized Telescope



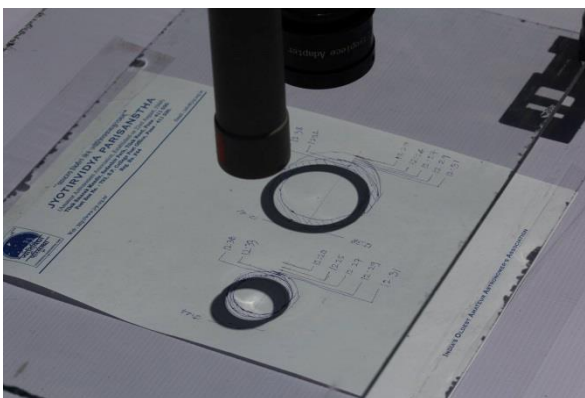


## Planet shows and open programs

Since last few years, Parisansta organizes free programs for citizens of Pune from Kesariwada. The programs organized in year 2015-16 were as follows:

Date	Event	Place	Visitors
14 May 2015	Zero Shadow Day & Sunspots show	Tilak Smarak Mandir	40
23 May 2015	Saturn at opposition	Kesariwada	300
1-2 July 2015	Jupiter – Venus Conjunction	Kesariwada	900
13-14 December 2015	Geminids Meteor Shower	Hatve village near Nasarapur	73
5 March 2016	Jupiter at opposition	Kesariwada	400
14 March 2016	Occultation of Aldebaran	New English School, Tilak Road	200

On May 14, in city of Pune, Sun passes exactly through zenith i.e. point in the sky exactly overhead at 12.31 pm. At this moment, if we try to observe shadow of a pillar exactly perpendicular to ground, or similar thing, then you will see that shadow is disappeared for few moments. We celebrate this day as a Zero Shadow Day for Pune. The public program for same was held at Tilak Smarak Mandir. Zero Shadow was demonstrated to common public and apparent movement of Sun in sky was explained. Sunspots were also shown through telescopes to people during this program.



Saturn was shown to common public at Kesariwada through 6 & 8 inch telescopes on 23 May 2015 on occasion of its opposition. Similarly on 1<sup>st</sup> & 2<sup>nd</sup> July, conjunction of Jupiter & Venus; on 5<sup>th</sup> March 2016, Jupiter at opposition was shown to public through telescopes at Kesariwada.

On 14 March 2016, Moon occulted Aldebaran or Rohini Nakshatra. This

event was shown to public by live projection of their view taken through 6 inch telescope. It was projected over 32 feet big screen and thus 200 people can saw the event happening live.

Following members of Parisanstha volunteered to make these programs successful: Ms. Aparna Kinkar, Mr. Aniruddha Deshpande, Mr. Deepak Joshee, Mrs. Ketaki Dave, Mr. Omkar Gavali, Mr. Atharva Pathak, Mr. Milind Joshi, Mr. Amit Kadlaskar, Mr. Ramchandra Karanje, Ms. Bhumika Rathore, Mr. Siddharth Birmal, Ms. Prajakta Khati, Ms. Shruti Deshpande, Mr. Sarang Sahasrabudhe, Ms. Harsha Kulkarni, Mr. Sushen Joshi, Mr. Nayan Kutwal, Ms. Sampada Nandurdikar, Mr. Shubham Kulkarni, Mr. Sameer Godbole, Mr. Rugved Pund, Ms. Rithika Deshmukh, Ms. Monika Gundecha, Ms. Madhavi Patankar, Mr. Aniket Kelkar, Mr. Abhay Dasharath, Mr. Nilay Mokashi, Ms. Isha Patankar, Mr. Vishwajit Anjali, Mr. Sumit Purohit, Ms. Rucha Nanivadekar, Mr. Sujay Vaidya, Ms. Archana Dash, Ms. Sakshi Shejole, Mr. Mujataba Lokhandwala.

## Lectures

In the year 2015-16, Parisanstha organized three public lectures.

Date	Lecturer	Subject	Venue	Attendance
26 April 2015	Dr. Yogesh Wadadekar, Scientist, NCRA	25 Years of Hubble Space Telescope	Tilak Smarak Mandir – Basement Hall	80
13 December 2015	Ms. Sneha Rode, Former Geological Scientist, ISRO; Member, JVP	Geological importance of Lonar Impact Crater	Tilak Smarak Mandir – Basement Hall	70
17 December 2015	Prof. P. K. Ghanekar, Former Professor, Abasaheb Garware College	Impact Crater of Lonar	Tilak Smarak Mandir – Basement Hall	75



Lecture by Dr. Yogesh Wadadekar



Lecture by Prof. P. K. Ghanekar

## Study Tours

Following study tours were conducted by Parisanstha in the report year.

Date	Place	Participants	Guidance by
29 November 2015	Nehru Planetarium	30	Dr. Niruj Mohan Ramanujan
26 – 27 December 2015	Lonar Impact Crater	39	Mr. Bugdane, Lonar
14 February 2016	GMRT & IGO	68	Dr. Niruj Mohan Ramanujan

During visit to Nehru planetarium at Worli, participants visited planetarium as well as science center. Director of Planetarium, Dr. Niruj Mohan Ramanujan guided the participants during the visit.



Nehru Planetarium Visit

In Lonar study tour, participants visited places like Sharangadhar Mandir at Mehekar, Lonar main crater, temples in the crater, Dharatirtha Mandir, Daityasudan Mandir, Ambar crater, Sleeping Hanuman temple, etc. Bugdane Sir shared the scientific information about these places. Participants also studied magnetic stones formed due to meteorite impact, highly salty water in the Lonar Lake and biodiversity in the crater.

During the tour to Khodad & Girawali, participants visited Giant Meterwave Radio Telescope (GMRT) at Khodad and IUCAA Girawali Observatory (IGO) at Girawali. Dr. Niruj Mohan Ramanujan, scientist, NCRA explained working of Radio telescope, radio imaging etc. to the participants; whereas during visit to IGO, working and imaging with 2 metre telescope was explained to participants.





Efforts taken by Mr. Amit Kadlaskar for organization of these study tours are highly appreciated. Also following members supported him in the organization: Mr. Sarang Sahasrabudhe, Mr. Mandar Naravane, Mr. Aniruddha Deshpande and Ms. Aparna Kinkar.

### **Basic Astronomy Course**

This year Parisanstha conducted Basic Astronomy Course during 26 April to 17 May 2015 at Tilak Smarak Mandir. There were 40 participants in this course. It was inaugurated with a lecture by Dr. Yogesh Wadadekar, Scientist, National Center for Radio Astrophysics (NCRA). The course consisted of following lectures:

Date	Topic	Lecturer
26 April 2015	Inauguration & lecture on "25 years of Hubble Space Telescope"	Dr. Yogesh Wadadekar, Scientist, NCRA
27 April 2015	History of Astronomy – 1	Mr. Shekhar Phatak, Former President, JVP
28 April 2015	History of Astronomy - 2	Mr. Shekhar Phatak, Former President, JVP
30 April 2015	Solar System	Mr. Parimal Dave, Executive committee member, JVP
1 May 2015	Comets and Meteors	Mr. Sarang Sahastrabudhe, Executive committee Member, JVP
2 May 2015	1. Day Time Astronomy 2. Multiwavelength Astronomy	Dr. Sagar Gokhale, Secretary, JVP
3 May 2015	Positional Astronomy and Time - 1	Mr. Deepak Joshee, Vice President, JVP
4 May 2015	Positional Astronomy and Time – 2	Mr. Deepak Joshee, Vice President, JVP
5 May 2015	Instruments for Astronomical Observations	Mr. Parimal Dave, Executive committee member, JVP
6 May 2015	Visit to Jyotirvidya Kesariwada Observatory	Mr. Deepak Joshee & Mr. Aniruddha Deshpande, Vice President, JVP
7 May 2015	Astro-Photography	Mr. Shekhar Phatak, Former President, JVP
8 May 2015	Astro-Photography	Mr. Shekhar Phatak, Former President, JVP
9 May 2015	Overnight Observational Session at Gadgil Farms	Mr. Deepak Joshee, Vice President, JVP
10 May 2015	Cosmology	Mr. Mujataba Lokhandawala, President, JVP
11 May 2015	Eclipses, transits, occultation and phenomena in Astronomy	Mr. Suhas Gurjar, Former President, JVP
12 May 2015	Variable Stars	Mr. Abhay Dashrath, Lecturer, D. Y. Patil College of Engineering
13 May 2015	Visit to Jyotirvidya Kesariwada Observatory	Mr. Deepak Joshee & Mr. Aniruddha Deshpande, Vice President, JVP

15 May 2015	Software for Astronomical Studies	Mr. Sameer Dhurde, Science Popularization Officer, IUCAA
16 May 2015	Radio Astronomy	Dr. Neeruj Mohan Ramanujan, Scientist, NCRA
17 May 2015	Certificate distribution and Lecture on "Careers in Astronomy"	Dr. Varun Bhalerao, Post-Doctoral Fellow, IUCAA



Jyotirvidya Parisanstha members, Mr. Atharva Pathak, Mr. Ramchandra Karanje, Mr. Omkar Gavali, Ms. Bhumika Rathore, Mr. Nilay Mokashi, Mr. Amit Kadlaskar, Mr. Parimal Dave, Mr. Sameer Godbole, Mr. Sarang Sahasrabudhe, Mr. Siddharth Birmal, Mr. Deepak Joshee, Mr. Aniruddha Deshpande, Mr. Hari Shankar and Ms. Aparna Kinkar helped in successful organization of the course.

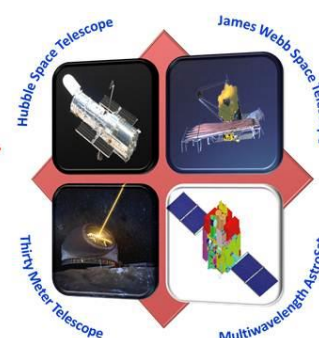
## Astronomical Exhibitions

In the report year, Parisanstha organized following exhibitions:

### Hubble & Beyond

On the occasion of "International Light Year-2015", Parisanstha organized an astronomical exhibition on "Hubble & Beyond" at Jawaharlal Nehru Cultural Centre,

# Hubble & Beyond



Opposite Mahatma Phule Museum, Ghole Road, Pune between 21-23 August 2015.

Almost entire of our knowledge about the universe comes from studying the light emitted, reflected or transmitted by objects in space. Telescopes play important role in collecting and analyzing this light coming from celestial bodies. Hence this year's Jyotirvidya Parisanstha's exhibition aimed at the milestone in astronomical telescopes: The

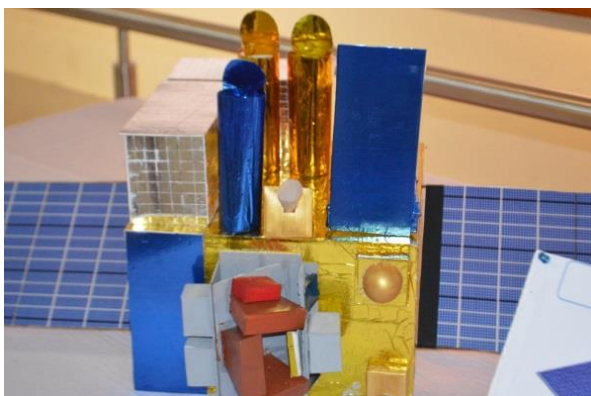
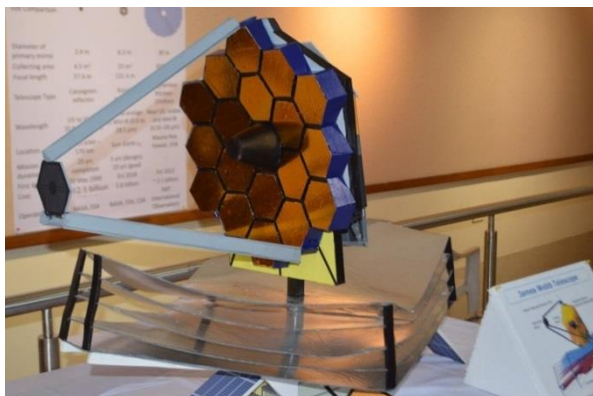


Hubble Space Telescope which completed 25 years in 2015; and next generation telescopes. Mr. Sameer Dhurde, Science Popularization Officer, IUCAA, inaugurated the exhibition. Around 2200 people visited this exhibition. This activity was also reported on the official website of International Light Year.

This exhibition gave information about historical discoveries by Hubble Space

telescope; James Webb Space Telescope-successor of Hubble Telescope; Astrosat – India's multiwavelength space telescope; Thirty Meter Telescope and New Horizons – Space Mission to Pluto. Models of these telescopes along with posters were exhibited and also short films will be showed during the exhibition.

Volunteers worked really hard through entire July & August months to make models and posters. Following members of Parisanstha worked very hard to make this exhibition a big success: Mr. Atharva Pathak, Mr. Hari Shankar, Mr. Ramchandra Karanje,



Mr. Omkar Gavali, Mr. Siddharth Birmal, Ms. Rethika Deshmukh, Ms. Shruti Deshpande, Ms. Harsha Kulkarni, Mr. Amit Kadlaskar, Mr. Sarang Sahasrabudhe, Mr. Vaibhav, Mr. Nilay Mokashi, Ms. Ketaki Dave, Ms. Akalpita Kinkar, Ms. Madhavi Patankar, Ms. Sampada Nandurdikar, Mr. Chinmay Ekbote, Mr. Sudhanshu Patil, Ms. Bhumiika Rathore, Ms. Prajakta Khaty, Mr. Mandar Naravane, Mr. Milind Halbe, Ms. Monika Gundecha, Mr. Shubham Kulkarni,



Mr. Sushen Joshi, Mr. Aniket Kelkar, Mr. Vedant Sole, Ms. Sakshi Shejole, Ms. Sonal Kelavadkar, Mr. Vishwajit Anjali, Ms. Isha Patankar, Mr. Milind Joshi, Mr. Mayuresh Wagh, Dr. Amod Rairikar, Mr. Sameer Godbole, Ms. Aparna Kinkar, Mr. Abhay Dasharath, Mr. Deepak Joshi, Mr. Aniruddha Deshapande, and Mr. Mujtaba Lokhandwala, Mr. Sagar Gokhale.



This exhibition was also exhibited in some colleges in the Pune city area.

Date	Place	Students visited
24 August 2015	Modern College, Pune	1200
12-13 September 2015	Dr. D. Y. Patil Institute of Engineering and Technology, Pimpri	500
16 September 2015	J. S. P. M. Rajarshi Shahu College of Engineering, Tathavade	750
1 October 2015	Dr. D. Y. Patil College of Engineering, Akurdi	300
9-10 October 2015	College of Engineering, Pune	400
13-14 January 2016	Sinhagad College of Engineering, Pune	700



For these exhibitions, members of Parisanstha trained students from respective college and then these students exhibited, explained models and posters in the exhibition.





Following members worked hard to make these exhibitions successful: Mr. Atharva Pathak, Mr. Vedant Sole, Mr. Aniket Kelkar, Mr. Vishwajit Anjali, Mr. Omkar Gawali, Mr. Sudhanshu Patil, Mr. Mayuresh Wagh, Ms. Bhumika Rathore, Mr. Aniruddha Deshpande, Mr. Shubham Kulkarni, Mr. Abhay Dasharath, Mr. Sarang Sahasrabuddhe, Ms. Rethika Deshmukh, Mr. Sushen Joshi, Mr. Sujay Vaidya, Ms. Sakshi Shejole, Mr. Siddharth Birmal, Mr. Deepak Joshee, Ms. Madhavi Patankar.



### **Hubble & Beyond Quiz**

Along with the exhibition organized by Parisanstha at Jawaharlal Nehru Cultural Centre, Parisanstha also organized an Astronomical Quiz Competition for



school and college students. This was organized in two age groups: (1) School students between 8<sup>th</sup>



to 10<sup>th</sup> Standard (2) University students. 130 students from 11 schools and 25 colleges participated in this competition. Mr. Mujataba Lokhandwala, President, Jyotirvidya Parisanstha and Mr. Sameer Dhurde, Science Popularization Officer, IUCAA worked as judge for the quiz.

In this competition, in school student's group students of New English School

Tilak Road were winners whereas students of Millennium National School were runner ups. In college student's group, students from Fergusson College stood first and students from Geology Department of Pune University were runner ups.

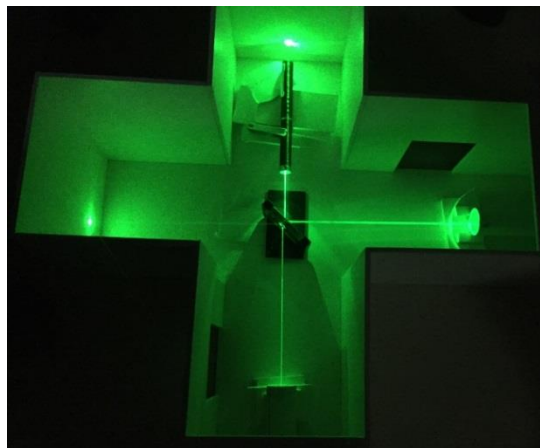
Mr. Sarang Sahasrabuddhe, Mr. Omkar Gawali, Ms. Rucha Naniwadekar, Mr. Shubham Kulkarni, Ms. Bhumika Rathore, Mr. Mayuresh Wagh, Mr. Sudhanshu Patil, Mr. Vishwajit Anjali organized this program.





## **National Science Day**

We celebrate National Science Day on 28<sup>th</sup> February. On this occasion, IUCAA organized an open program for general public and invited Jyotirvidya Parisanstha members to guide the visitors. On this



occasion, Parisanstha members had made model of “Laser Interferometer Gravitational Wave Observatory” (LIGO) that IUCAA is going to erect in India. Members also made model to explain Einstein’s concept of “Space Time Curvature” from his theory of relativity. Members also explained posters related to “Mega Projects of IUCAA” and model of Thirty Meter Telescope (TMT). Members also carried out star gazing session in the evening of 28<sup>th</sup> February. For organization of this exhibition and star gazing program, following members worked hard: Mr. Atharva Pathak, Mr. Siddharth Birmal, Mr. Sushen Joshi, Mr. Sameer Godbode, Mr. Milind Joshi, Mr. Ramchandra Karanje, Mr. Omkar Gavali, Ms. Prajakta Khaty, Mr. Sarang Sahasrabuddhe, Ms. Sakshi Shejole, Ms. Rethika Deshmukh, Ms. Bhumika Rathore, Ms. Ketaki Dave, Ms. Isha Patankar, Mr. Nilay Mokashi, Mr. Amit Kadlaskar and Mr. Aniruddha Deshpande.



## **Other Programs**

- With the lead of Mr. Abhay Dashrath, JVP member, DIT Astronomy Club was founded on 12 September 2015 at Dr. D. Y. Patil Institute of Engineering and Technology, Pimpri. Mr. Sarang Sahasrabuddhe, Mr. Deepak Joshee and Mr. Aniruddha Deshpande were present on this occasion.
- Mr. Sarang Sahasrabuddhe participated in the workshop on educating students on Astronomy Olympiad at Homi Bhabha Center for Science Education between 2 to 5 November 2015.

- On 24 November 2015, Mr. Sarang Sahasrabuddhe delivered a lecture on “Planetarium Software” at Rotary Club of Gandhi Bhavan. He also demonstrated the software. 45 members of Rotary club were present for the lecture.
- An internship program was organized between 25 to 29 December 2015, by Department of Science and Technology, Government of India at Jawaharlal Nehru National College of Engineering, Shimoga, Karnataka; through Innovation in Science Pursuit for Inspired Research (INSPIRE). This camp was organized for students of 11<sup>th</sup> standard they were guided regarding opportunities in different branches of science. Mr. Nilay Mokashi, member, Jyotirvidya Parisanstha were invited to guide students on astronomy. Mr. Mokashi also conducted short star gazing session for the students. 150 students participated in this workshop.
- Model of Thirty Meter Telescope (TMT) made by Parisanstha members were exhibited at the exhibition organized at Mysore on occasion of 103<sup>rd</sup> Indian Science Congress. Scientists working on this project explained working of this telescope using the model displayed.
- Mr. Sarang Sahasrabuddhe and Mr. Sushen Joshi participated in “Quiztronomy 2016”, a quiz competition organized by College of Engineering, Pune, by the team name, G-wave surfers. Team won this quiz competition.
- Birla Institute of Technology & Science, Goa organized a workshop on “Basic Astronomy and use of automated telescopes” for its students on 12-13 March 2016. Mr. Deepak Joshee and Mr. Aniruddha Deshpande were invited for delivering a lecture on “Small projects with amateur telescopes”. Along with the lecture, they also demonstrated the participants, how to control telescope using computer interface and how to carry out observations of variable stars and asteroid movement. During this session, for the first time, telescope at Kesariwada JVP Observatory was remotely operated by Mr. Deshpande and Mr. Joshee along with Mr. Ramchandra Karanje. Mr. Karanje started telescope at observatory and Mr. Joshee and Mr. Deshpande operated it from Goa to take observations of variable star, AH Vir and movement of asteroid, 10 Hygiea with respect to background stars. 35 students of BITS attended this workshop.



- Mr. Aniruddha Deshpande delivered a lecture on 'Telescope development with special reference to resolving power' on 25<sup>th</sup> March 2016 at Maharashtra Institute of Technology.

## Libraries

Parisanstha has an astronomical book library for many years as well as telescope library from last three years. Presently book library has 159 Marathi books and 425 English books; issues of two



periodicals, “Sky and Telescope” and “Astronomy”. In the telescope library, Parisansta has made available five 4 inch and 6 inch telescopes and one small radio telescope for solar observations. The list of books in the library is made available on the JVP website. In the report year, regular members of book library were nine; whereas three members took benefit of the telescope library facility.

### **Social networking**

- Mr. Sagar Gokhale, Mr. Deepak Joshee and Mr. Atharva Pathak maintained website of Parisansta ([www.jvp.org.in](http://www.jvp.org.in)) regularly throughout the year.
- Parisansta started using a mobile app viz. Whatsapp to communicate with members and share with them the information about programs of Parisansta. Mr. Sarang Sahasrabudhe and Mr. Deepak Joshee carry out this activity. A Google Group has also been formed to communicate with members regarding programs of Parisansta.
- On the community site Facebook, Parisansta runs a group named “JVP ज्योतिर्विद्या परिसंस्था” and a page named “Jyotirvidya Parisansta”. This group and a page are very active and regular discussions occur in the group on various activities of Parisansta and various astronomical events. There are more than 2400 members of group, “JVP ज्योतिर्विद्या परिसंस्था”
- Twitter handle of Jyotirvidya Parisansta was activated this year. Mr. Sarang Sahasrabuddhe & Mr. Deepak Joshee are handling this activity. There are more than 140 followers of Jyotirvidya Parisansta on Twitter.

### **Jyotirvidya Kesariwada Observatory report**

Parisansta’s 10” telescope is installed at Kesariwada and we conduct various scientific observations using the telescope and Canon 7D setup. Since Kesariwada is located in the heart of the city, this area is highly light polluted. This was introducing some errors in the variable star observations. To rectify these errors, last year Parisansta started an important project of building a dome for the telescope. This dome construction was completed this year and dome started working successfully. The facility was inaugurated in the hands of Dr. Ajit Kembhavi, Director, Inter University Center for Astronomy & Astrophysics (IUCAA).



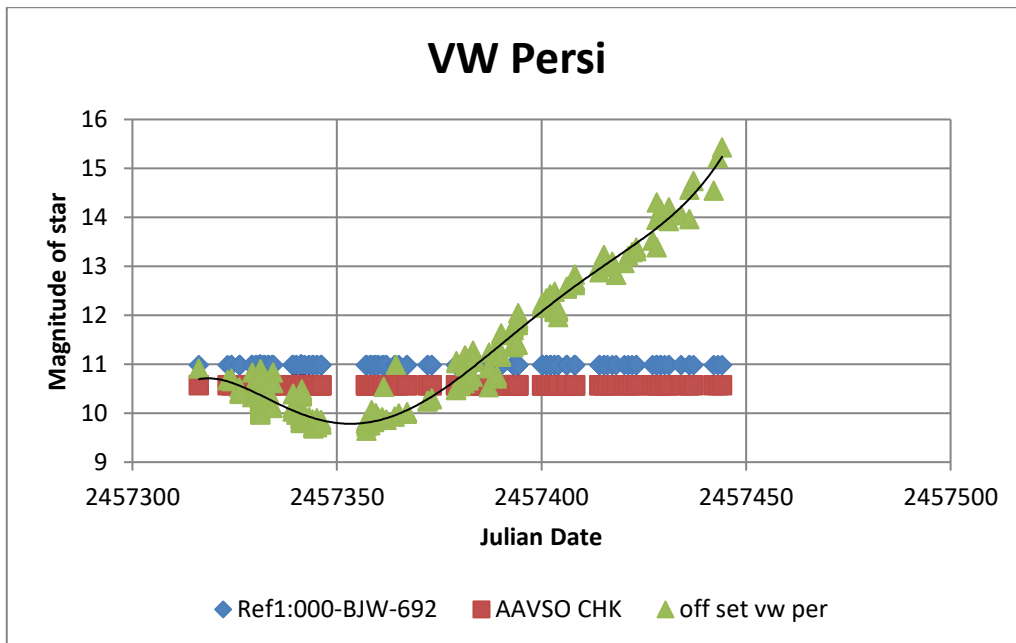
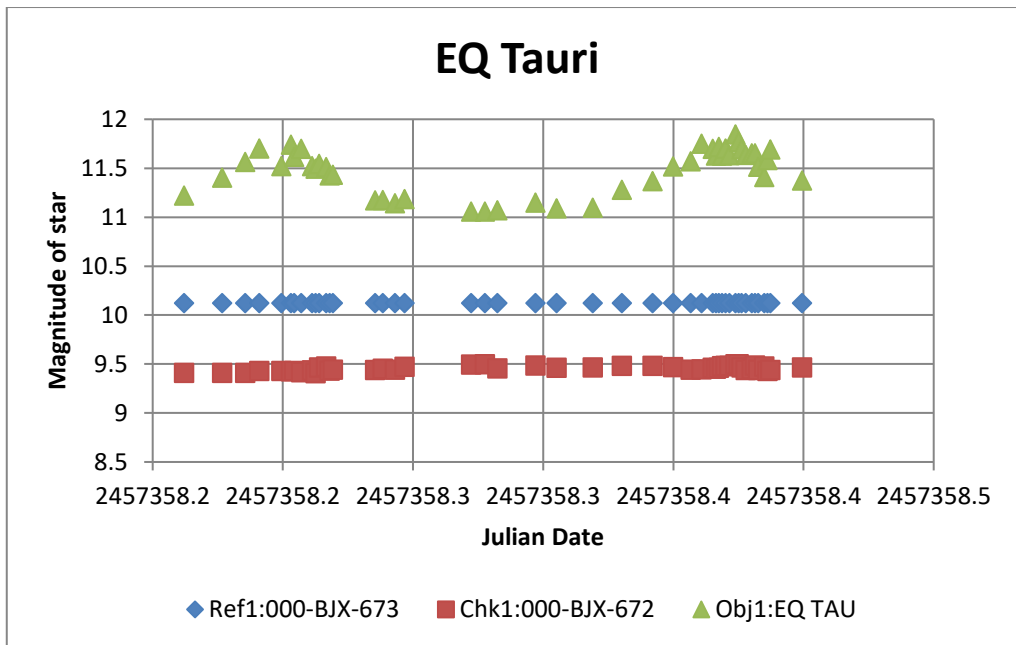
Mr. Aniruddha Deshpande, Mr. Milind Kelkar, Mr. Deepak Joshee and Mr. Suhas Gurjar worked on dome design and construction.

Following observations were conducted in the report year:

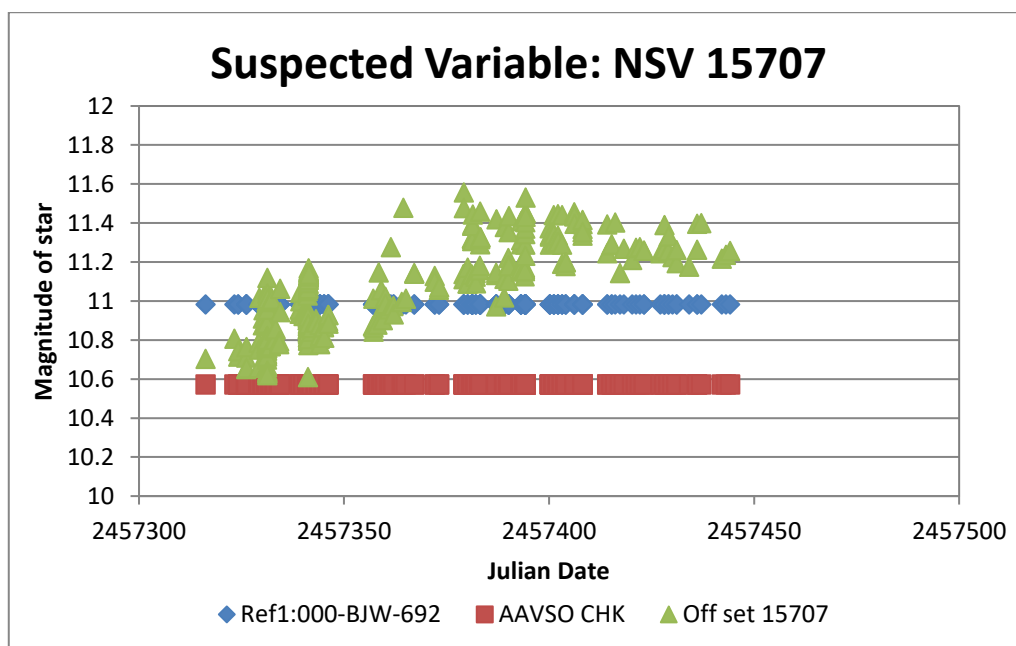
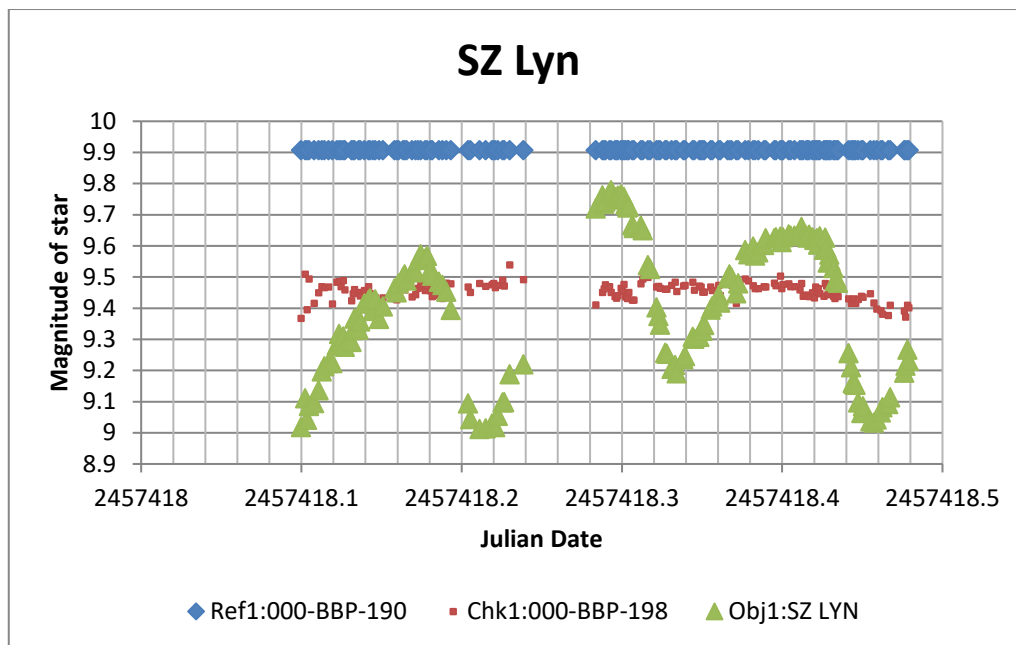
Object	Object type	Dates of Observations	Comment
UZ LEO, U GEM, RW COM, Eleonora, W UMA, AZ VIR	Miscellaneous	2, 17, 23, 24, 30 Apr 15; 3, 6, 12, 20, 22, 23, May 15; 1, 2, 3, 4, 30 Jun 15	Dome trials
AB AND	Variable Star	24-Sep-15	
AH VIR	Variable Star	12-Mar-16	
AS PER	Variable Star	30 Oct 15, 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, 30 Nov 15, 1, 2, 3, 4, 5, 7, 8, 10, 15, 16, 22, 23, 24, 25, 26, 27, 30 Dec 15, 1, 2, 5, 6, 7, 12, 13, 14, 15, 16, 18, 20, 26, 28, 30 Jan 16, 1 to 15 Feb 16, 1 Mar 16	
BQ PER	Suspected variable Star	23, 28 Oct 15	
Catalina	COMET	30-Jan-16	
EQ TAU	Variable Star	1, 2, 3, 4, 5, 7, 8 Dec 15	
M 34	Open Cluster	30-Dec-15	
MZ CYG	Variable Star	24, 27, 28 Oct 15	AAVSO ALERT
NGC 1605	Open Cluster	22-Dec-15	
Nova Aquila	Nova	23-Oct-15	
NSV 1077	Suspected variable Star	22, 27, 28, 30 Oct 15; 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, 30 Nov 15; 1, 2, 3, 4, 5, 7, 8, 10, 15, 16, 17, 22, 23, 24, 25, 27, 30 Dec 15; 1, 2, 5, 6, 7, 12, 13, 14, 15, 16, 18, 20, 26, 27, 28, 30 Jan 16; 1, 2, 3, 4, 8, 9, 10, 11, 12, 15, 17, 18, 20, 26, 28, 29 Feb 16; 2 Mar 16	
NSV 1130	Suspected variable Star	28-Oct-15	
NSV 1150	Suspected variable Star	28-Oct-15	
NSV 15133	Suspected variable Star	16, 17 Dec 15	
NSV 15519	Suspected variable Star	23, 27 Oct 15	
NSV 15682	Suspected variable Star	28-Oct-15	

NSV 15688	Suspected variable Star	22, 28, 30 Oct 15; 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, 30 Nov 15; 1, 2, 3, 4, 5, 7, 8, 10, 15, 16, 22, 23, 24, 26, 27, 30 Dec 15; 1, 2, 5, 6, 7, 12, 13, 14, 15, 16, 18, 20, 26, 28, 30 Jan 16; 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 Feb 16; 1 Mar 16	
NSV 15707	Suspected variable Star	28, 30 Oct 15; 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, 30 Nov 15; 1, 2, 3, 4, 5, 7, 8, 10, 15, 16, 22, 23, 24, 25, 26, 27, 30 Dec 15; 1, 2, 5, 6, 7, 12, 13, 14, 15, 16, 18, 20, 26, 28, 30 Jan 16; 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 Feb 16; 1 Mar 16	
NSV 183	Suspected variable Star	16, 17 Dec 15	
NSV 529	Suspected variable Star	21-Oct-15	
NSV 629	Suspected variable Star	20-Oct-15	
NSV 87	Suspected variable Star	16, 17 Dec 15	
NSV 93	Suspected variable Star	16, 17 Dec 15	
NSV 932	Suspected variable Star	23, 27 Dec 15	
RR GEM	Variable Star	21, 23, 27 Jan 16	MSc Project
ST PER	Suspected variable Star	27-Oct-15	
SZ CYG	Variable Star	27, 28 Oct 15	AAVSO ALART
SZ LYN	Variable Star	30-Jan-16	BSc Project
TX CYG	Variable Star	27, 28 Oct 15	AAVSO ALART
V0511 PER	Variable Star	30 Oct 15; 2, 3, 4, 5, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 19, 30 Nov 15; 1, 2, 3, 4, 5, 7, 8, 10, 15, 16, 22, 23, 24, 25, 26, 27, 30 Dec 15; 1, 2, 5, 6, 7, 12, 13, 14, 15, 16, 18, 20, 26, 28, 30 Jan 16; 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 Feb 16; 1 Mar 16	
VX CYG	Variable Star	27, 28 Oct 15	AAVSO ALART
W UMA	Variable Star	8, 21 Mar 16	MSc Project
X CYG	Variable Star	27, 28 Oct 15	AAVSO ALART

For these observations, 2759 photographs were clicked over the year's span. Main focus of the observations was on variable star observations. Light curves of selected stars are as follows:

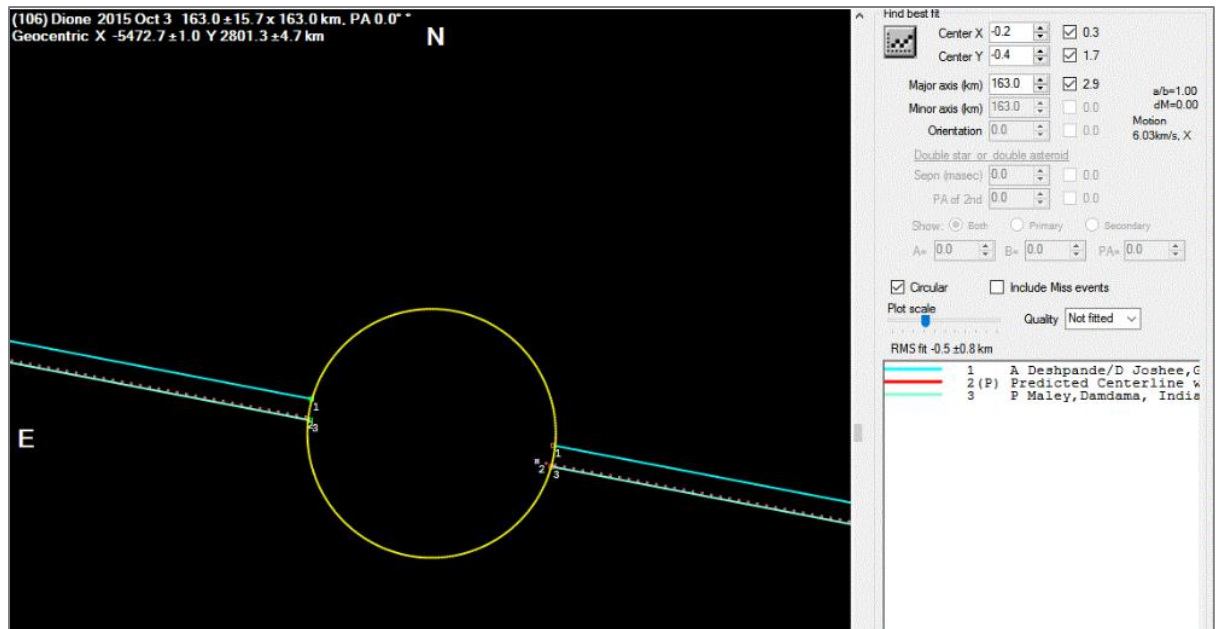






## Other observational projects

- On October 3, 2015 an asteroid, "106 Dione" occulted a star, "HIP 12740". Parisanstha members, Mr. Aniruddha Deshpande, Mr. Deepak Joshee and Mr. Suhas Gurjar observed this occultation along with Mr. Ajay Talvar, Mr. Sameer Dhurde and Mr. Vikrant Kumar Agnihotri. Observations were carried out from Gurgaon, Hariyana and were submitted to "International Occultation Timing Association (IOTA)".



- On November 17, 2015 Leonids meteor shower was observed from Hatve village near Nasarapur. 38 members participated in this activity.
- On 12/13 & 13/14 December 2015, 73 members observed Geminids meteor shower. On 12/13 December, members carried out scientific observations of meteor shower from Sinhagad, whereas on 13/14 & 14/15 December along with scientific observations, open program was also carried out at Hatve village near Nasarapur. 73 citizens participated in this program. Members also carried out photography of meteor shower.
- Messier Marathon: Parisanstha members participated in Messier Marathon this year on 9/10 March 2015. The event was conducted at Kolambi village, Taluka Velha, District Pune. Following members participated in the marathon:

Sr.	Name	Instrument	Number of Messier objects observed
1	Mr. Atharva Pathak	8" & 6" telescope + 10 x 50	106

		Binoculars	
2	Mr. Shubham Kulkarni	8" & 6" telescope + 10 x 50 Binoculars	104
3	Ms. Ketaki Dave	6" telescope + 10 x 50 Binoculars	50
4	Pooja Nanivadekar	5" telescope	40
5	Sujay Vaidya, Sakshi Shejole	5" telescope	33
6	Rucha Nanivadekar, Sonal Kelvadkar	5" telescope	18



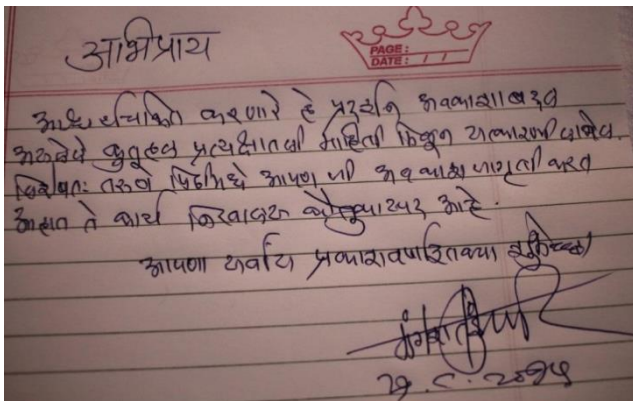
Governing council takes this opportunity to thank following members and personalities:

- Mr. Shailesh Tilak permitted to set up observatory facility at Kesariwada and made available the terrace of Kesariwada new building free of charge. Additionally, Kesariwada terrace, Tilak Smarak Mandir premises were made available free of charge for open programs. We are thankful to him for this valuable help.
- Ms. Aparna Kinkar looked after office activities and financial activities very well throughout the year. We are thankful to her.
- All the public star parties as well as invited star parties of Parisanstha were managed well by Mr. Sarang Sahasrabudhe. He was also helpful in the open programs of Parisanstha. We are thankful to him.
- Mr. Amit Kadlaskar organized all study tours single handedly. We are thankful to him as well.
- Dr. Amod Rairikar, Mr. Omkar Gawali & Mr. Atharva Pathak helped a lot for telescope maintenance over the year.
- Mr. Deepak Joshee made available his Canon 7D and Canon 5D cameras for observatory setup. We are thankful to Mr. Deepak Joshee.
- Dr. Neeruj Mohan Ramanujan guided study tours. We are thankful to him for his guidance.
- Mr. Suvam Nag Chaudhury helped in procurement of 5" telescope from USA. We are thankful to him.
- We are thankful to Mr. Madhav Gokhale for providing appropriate publicity to Parisanstha's programs in daily newspaper 'Sakal'.

\*\* \*\* \*



## Appendix 1: Feedbacks



A star party for all the lovely kids studying at @LOLPune. Experts at @JvpJyotirvidya helping out 🌟



Bharat Kokate

April 11 at 1:13pm

Attended 9th April's star party. Had a great expe...

[See Details](#)

Hi,

We attended star party yesterday. Had an amazing experience! Made us want to keep coming. Will also spread the word around as much as possible.

Hats off to all JVP volunteers for meticulous planning and execution, right from the registrations, transport, and all arrangements during the party.

Finally, about Sarang. He was just wonderful! What energy and enthusiasm!

We have become his fans!

Regards

Vivek Shende

From: Vaibhav Tati <vaibhavtati@gmail.com>

To: jyotirvidya-parisansta@googlegroups.com

Cc:

Date: Sun, 14 Feb 2016 10:15:03 +0530

Subject: Re: [JVP] Re: February star party - opportunity to see FIVE planets at dawn



Had a grt experience whole night in star party among Stars ✨, Constellations, Moon 🌑, Galaxies 🌌, Nebula's, Comets 🌠 ...

Seen 5 planets in one line Jupiter, Mars, Saturn, Mercury & Venus... 🌟🌟🌟

Saw the Jupiter belts & Saturn belt with its moon... 🌟🌟🌟

Also lots of info... 🧐🧐

An Awesome & Thrilling Experience with my First Star Party... 🌟🌟🌟🌟🌟

Lots of Thanks to JVP & JVP volunteers for grt planning & execution in all respect...

And what should I say @ Sarang....he is fabulous...

What a dedication... Hats off...!!!!

You made me Fall in Love with Stars & Sky AGAIN ...



Hello JVP team,  
Really want to appreciate the efforts you all put in for the 6th Feb event. Your coordination and syncing with each other & with audience was excellent.  
Now i wonder why i came to know about JVP so late. It means I have missed lot of other good events. Anyways seems new & different events keeps on happening. Looking forward to attend the same.  
Sarang and all volunteers hats off to your knowledge. Also more than knowledge what matters is how you explain it to layman & kids in simple terms & you all did it PERFECTLY.  
Thanks JVP !  
Best Regards  
Santosh Junnarkar



**Saagar Dhobale** ▶ JVP ज्योतिर्विद्या परिसंस्था

February 7 · 🌐

Another amazing [Star Party](#)... Awesome Energy Sarang and Team JVP 😊



**Paramita Sen** ▶ JVP ज्योतिर्विद्या परिसंस्था

February 15 · 🌐

had an awesome time on 13th Feb,2016 [star party](#) , feeling celestial bliss..Thanks [Sarang Sahasrabudhe](#) for giving us the opportunity to encounter this..childhood dream came true..will look forward to join you guys to be part of such events in the days to come..



**Shantish Paranjape** ▶ JVP ज्योतिर्विद्या परिसंस्था

February 14 · 🌐

Another great experience with jvp event !![star party](#) at abhyankar farms.. thanks to the entire jvp team and superman sarang.



**Priyal Sawarkar** ▶ Jyotirvidya Parisansta

February 29 · 🌐

Thanks JVP for conducting such a wonderful LIGO Model at IUCAA Pune. Wish you all the best for further activities...  
Wish to see JVP in future every year at IUCAA Pune on the occasion of National Science Day celebration 🙏🙏🙏



**Bhushan Sathe**

February 7 · 🌐 ▼

Back from an amazing stargazing session with [Jyotirvidya Parisansta](#). Watched Jupiter, Mars, Saturn, a comet and a spectacular formation of Venus, Mercury and Moon early morning. A memorable night indeed. Special thanks to [Sarang Sahasrabudhe](#) for all the knowledge input. Well done.

**Pratham Patil**

December 16, 2015 · 2 people · ▼

Had a wonderful night at Hatve village with Jyotirvidya Parisanstha and Atharva Pathak. First time my meteor count got 3 digits. Saw around 392 meteors. In a single night. That too in just 5 hours. Best night of my life.

**Sandeep Kulkarni** ▶ JVP ज्योतिर्विद्या परिसंस्था

February 15 · 🌐

Thanks to JVP Team for an excellent **Star Party** on 13th Feb! 5 planets, 9 Rashis, 21 Nakshatras, Chinese Space Station 'Tiangong-1', Iridium Flares, few Satellites & Meteors along with numerous other constellations made it really worth! Special Thanks to Sarang Sahasrabudhe for his outstanding sessions with all the mythological and astronomical stories! Keep it up!



## Appendix 2: News Presence



केळकर रस्ता : ज्योतिर्विद्या परिसंस्थेने उभारलेल्या 'फॅब्रिकेटर डोम'चे उद्घाटन करताना आयुकाचे संचालक डॉ. अजित के.भावी. या प्रसंगी (डावीकडून) अनिरुद्ध देशपांडे, सुहास गुर्जर, डॉ. प्रकाश तुपे, डॉ. के.भावी, मुजताबा लोखंडवाला, डॉ. अमोद रायरीकर, दीपक जोशी.

### ताऱ्यांची निरीक्षणे नोंदविणे सुलभ

पुणे, ता. ८ : "ज्योतिर्विद्या परिसंस्थेने उभारलेल्या डोममुळे दुर्बिणीतून अवकाशातील ताऱ्यांची शास्त्रीय निरीक्षणे नोंदविणे अधिक सुलभ होईल," असे मत आयुकाचे संचालक डॉ. अजित के.भावी यांनी व्यक्त केले.

संस्थेने नारायण पेटेल टिळक वाड्याजवळील इमारतीवर उभारलेल्या फॅब्रिकेटरच्या डोम (चुमट)च्या उद्घाटन प्रसंगी ते बोलत होते. यावेळी संस्थेचे अध्यक्ष मुजताबा लोखंडवाला, अनिरुद्ध देशपांडे, दीपक जोशी, सुहास गुर्जर, डॉ. प्रकाश तुपे, डॉ. अमोद रायरीकर, मयूरेश वाघ उपस्थित होते. देशपांडे म्हणाले, "ताऱ्यांची दीप्ती किंवा तेजस्विता बदलत असते. त्या ताऱ्यांचे निरीक्षण आणि गुणवत्ता चांगल्या पद्धतीने टिपता यावी म्हणून डोम उभारला आहे." अमेरिकन असोसिएशन व्हेरिएबल स्टारस ऑब्झर्व्हेशन संस्थेकडून संयुक्तपणे निरीक्षणे नोंदविण्यासाठी संस्थेला विचारल्याचेही त्यांनी सांगितले.

### For 60 seconds on Wednesday, watch shadows disappear

#### HOW TO SEE IT

- Hold a cylindrical object, like a shuttle-cock box, in the Sun. The shadow will disappear at 12:31 pm.
- Keep a transparent bottle, half-filled with water and without the cap, on a glass surface. The image of the bottle rim will be seen exactly at the centre of the bottle.
- Hang a small ball, bead or stone by a thin string to a horizontal rod. The shadow of the bead will fall on the shadow of the rod.

#### At other places

PLACE	DATE	TIME
Ahmednagar	May 16	12:27
Aurangabad	May 18	12:25
Beed	May 15	12:23
Jalna	May 19	12:23
Latur	May 13	12:20
Nanded	May 16	12:17
Nashik	May 19	12:31
Parbhani	May 16	12:19



At 12:30 pm, the shadow of a tube will become exactly circular

science popularization in-charge at Inter-University Centre for Astronomy and Astrophysics (IUCAA), in the University of Pune.

Pune: At precisely 12:31 pm on Wednesday, your trusted shadow will desert you for a minute.

The celestial phenomenon, 'zero shadow', occurs once every year in places situated at the tropics and twice a year at other places. "It is a common misconception that the Sun comes directly overhead at noon every day as it crosses the zenith only twice a year," said Arvind Paranjpye, director of Nehru Planetarium in Mumbai.

Due to the tilt of the Earth's axis, the Sun travels at 23.5 degrees north and south of the celestial equator. The Sun falls directly overhead on places lying over the equator during equinox and moves northwards towards the tropic of cancer and then again progresses southward. Hence, the places falling between the tropic of cancer and tropic of Capricorn experience 'zero shadow day' twice a year, as the Sun is directly overhead and casts no shadow for a brief time.

"As the Sun continues to move, each place would experience the zero shadow day on a different day and at a different time," says Samir Dhurde.

The Jyotirvidya Parisanstha, an amateur astronomers' association, has made arrangements at Tilak Smarak Mandir. Spots of the Sun can be seen from noon to 1 pm. The IUCAA will take a group of teenage students, a part of its ongoing astronomy summer camp outdoors and perform experiments for them to learn what is zero shadow. The Nehru Planetarium will hold a public demonstration on its premises in Mumbai on May 15.

## पुणेकरांनी अनुभवला 'झीरो शॅडो' चा अनुभव

राहुल देशमुख

म. टा. प्रतिनिधी, पुणे

बुधवारी दुपारी साडेबाराच्या सुमारास काही मिनिटांसाठी आपली स्वतःची सावली जणू गायब झाल्याचा अनुभव पुणेकरांनी घेतला. एकमेकांच्या बरोबर पायाखाली आलेल्या सावलीचे फोटो काढत पुणेकरांनी 'झीरो शॅडो'चे सेलिब्रेशनही केले.

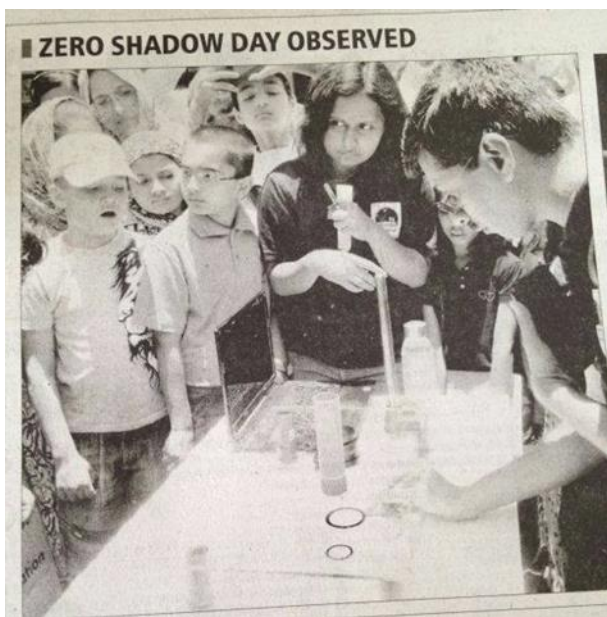
पृथ्वीचा अक्ष तिच्या सूर्याभोवती परिक्रमा करण्याच्या कक्षेस लंब नसून, साडेतेवीस अंशांनी कललेला आहे. त्यामुळे पृथ्वीवर ऋतू बदलतात आणि सूर्याचे उत्तरायण, तसेच दक्षिणायन होते. दररोज सूर्योदयाची किंवा सूर्यास्ताची क्षितिजावरची जागा बदलत असते. १३ किंवा १४ मे आणि जुलै महिन्यातील एक दिवस अशा दोन दिवशी, मध्याह्नीच्या वेळी सूर्य बरोबर डोक्यावर येतो. त्या वेळी प्रत्येक सरळ उभ्या वस्तूची सावली बरोबर त्याच्या पायाखाली जाते आणि काही काळ ती जणू नाहीशीच झाल्याचा भास होतो. त्यालाच 'झीरो शॅडो' किंवा सावली नाहीशी होणे, असे म्हणतात. यंदा हा योग बुधवारी म्हणजेच १४ मे रोजी आला होता. दुपारी १२ वाजून ३१ मिनिटांनी सूर्य डोक्यावर आला आणि सावली काही मिनिटांसाठी जणू गायब झाली.

पुणेकरांना या घटनेमागचे विज्ञान कळावे आणि



त्यांना या घटनेचा आनंद घेता यावा, यासाठी ज्योतिर्विद्या परिसंस्थेतर्फे टिळक स्मारक मंदिराच्या आवारात विशेष कार्यक्रमाचे आयोजन करण्यात आले होते. तेथे संस्थेचे डॉ. सागर गोखले, अनिरुद्ध देशपांडे, सुधीर गोडबोले आदींनी मार्गदर्शन केले. या घटनेचे साक्षीदार होण्यासाठी बच्चेकंपनीसह नागरिकांनी गर्दी केली होती. एका काचेच्या टेबलावर काही वस्तू ठेवून त्या वस्तूंच्या सावलीच्या आधारे पुणेकरांना या घटनेचे प्रात्यक्षिक दाखविण्यात आले. मोठ्या टेलिस्कोपमधून सौरडागाचे निरीक्षण करण्याची संधीही पुणेकरांनी साधली.







# अनु गायब झाली सावली!

**झीरो शॅडो डे : विविध ठिकाणी बालकांनी घेतला अनुभव**

पुणे : दिवसा जी सावळी सोडत नाही आणि पुढे-मागे येते ती सावली. पण, ही सावलीच गायब झाली तर... सावली गायब होण्याचा हा अनुभव आज पुणेकरांनी दुपारी अनुभवला. निमित्त होते 'झीरो शॅडो डे'चे. दुपारी साडेबाराच्या सुमारास सूर्य डोक्यावर येताच सर्व पुणेकरांची सावली काही मिनिटांकरिता गायब झाली होती. हा अनुभव घेण्यासाठी शहरातील काही ज्योतिषशास्त्र संघटनांनी कार्यक्रमच आयोजन केले होते.

ही नैसर्गिक अनेकही जादू पाहण्यासाठी आज बालचमूह मोठेही दुपारी विविध ठिकाणी जमले होते.

अनेकांनी घराच्या गळीवर जावून झीरो शॅडो डेचा अनुभव घेतला. ज्योतिर्विद्या परिसंस्थेच्या वतीने टिळक स्मारक मंदिरात दुपारी निरीक्षणाचा कार्यक्रम आयोजित केला होता. यामध्ये अचलवृद्धांनी उसाहाने भाग घेतला. यावेळी विविध वस्तू सूर्यप्रकाशात ठेवून त्यांची सावली हळू हळू कशी गायब होते हे प्रात्यक्षिकांद्वारे उपस्थितांना दाखविण्यात आले. तसेच, दुर्बिणीतून सोडागांचे निरीक्षणचही आयोजन केले होते. अशी माहिती ज्योतिर्विद्या परिसंस्थेचे दीपक जोशी यांनी दिली. ते म्हणाले, पृथ्वी लंब असल्याने

सूर्याभोवती फिरत असताना दिवस असा काही अशी कल्पना. त्यामुळे आपल्याकडे विविध वस्तू येतात आणि सूर्याचे उतरायला व दक्षिणावर्त होते. यालाच मकरवृत्त आणि कर्कवृत्त असे आपण म्हणतो. या दोन्हीच्या मध्ये पुणे शहर येते.

या काळात दोन असे दिवस येतात, की मध्याह्नीच्या वेळी सूर्य बरोबर डोक्यावर येतो आणि त्या वेळी प्रत्येक सगळी उभ्या वस्तूची सावली बरोबर त्याच्या पायाखाली जाते आणि काही काळ ती जणू नाहीशीच होते. यालाच आपण 'झीरो शॅडो डे' असे म्हणतो. (प्रतिनिधी)



**सावली कुठे गेली? : ज्योतिर्विद्या परिसंस्थेच्या वतीने टिळक स्मारक मंदिरात बुधवारी निरीक्षणाचा कार्यक्रम आयोजित केला होता. यात बालकांनी मोठ्या संख्येने सहभागी होऊन सावली गायब होण्याचा अनुभव घेतला.**



टिळक स्मारक मंदिर : ज्योतिर्विद्या परिसंस्थेने बुधवारी आयोजित केलेल्या 'झीरो शॅडो डे'ला काही संकेतस्थळांनी सावल्या लपल्या आणि विमुक्तल्यांना वेगळा अनुभव मिळाला.

## सावल्या पावलाखाली मिटल्या

पुणे, ता. १४ : सर्वेस आणखी पाऊलच करवारी सावली काही सेकंदांसाठी नाहीशी झाली आणि तो क्षण नैसर्गिकदत्त करणारासाठी धडाड्याच्या अनेकांच्या वेड्यासारखा समाधान आणि आनंद पसरला. 'झीरो शॅडो डे' निमित्ताने ज्योतिर्विद्या परिसंस्थेने टिळक स्मारक मंदिराच्या प्रांगणात आयोजित केलेल्या कार्यक्रमात सुमारे सैकडो पुणेकरांनी बुधवारी सोडागांचेही निरीक्षण करत आले.

दरवर्षी हे दृश्य ये आणि कुठे मिटल्यात पाहण्यास मिळते. पण कुठेच ये पाहण्यास प्रमाण अतिरिक्त

असल्याने त्याचा अभ्यास करता येत नाही.

याविषयी ज्योतिर्विद्या परिसंस्थेचे अध्यक्ष पांडक म्हणाले, "उत्तरायणांमुळे सूर्य खगोलीय विषुववृत्ताच्या वरतरेला आणि दक्षिणेला प्रवास करतो. त्यादरम्यान सूर्य पृथ्वीवरील विषुववृत्तवृत्त स्थानिक वेळेनुसार बारा काळा डोक्यावर म्हणजेच छ- मध्य बिंदूवर येतो. अशावेळी तो आपल्या शहराच्या अक्षांशातल्या अक्षांश अक्षात की त्या दिवशी 'झीरो शॅडो डे' पाहण्यास मिळतो." कळवणाऱ्याच्या

उत्तरेला आणि मकरवृत्ताच्या दक्षिणेला हो घट्टात काहीही पडत नसायचेही त्यांनी सांगितले. या वेळी 'विप्लवे'कडे

टेलिस्कॉपच्या माध्यमातून हे दृश्य उपस्थितांना पाहण्याची संधी मिळाली. दुपारी बारा वाजल्यापासून विमुक्तल्यांसह मोठ्यानीही उत्सुकतेने गर्दी केली होती. बारा वाजून एकतीस मिनिटांनी अकब्या काही सेकंदांसाठी या सावल्या पावलाखाली मिटल्या गेल्या आणि बालगोपाळांनी आश्चर्याने आनंद व्यक्त केला. त्यांना सोडागांचेही निरीक्षण करता आले.

या वेळी परिसंस्थेच्या कार्यकर्त्यांनी माहिती देत शंकांचे निरासन केले.

## ZERO SHADOW DAY || Citizens of Pune witnessed the bi-annual phenomenon on Wednesday

### When your shadow leaves your side



A young girl tries to see how much her shadow has shrunk. A special event was organised on Wednesday - Shashank Sane dna



Volunteers from the Jyotirvidya Parisansta explain the concept of zero shadow day on Wednesday - Shashank Sane dna

Shruti Zende @dnacpune

Pune: Astronomy enthusiasts, as well as citizens of Pune witnessed the phenomenon of zero shadow day on Wednesday. Organisations such as Jyotirvidya Parisansta, an association of amateur Astronomers and Inter-University Center for Astronomy and Astrophysics (IUCAA) organised a display of cylindrical objects to explain the phenomenon of zero shadow for the general public. People of all age groups were excited to witness the proceedings.

According to the information given by Jyotirvidya Parisansta, this is an astrological phenomenon, where the sun is exactly at a 90 degree angle to the

earth for a few seconds. Hence, the shadows that fall, appear closer to the object. This phenomena occurs twice a year, once in May and then in July.

Samir Dhurde, incharge of science popularisation at the IUCAA told dna, "Only Science or astronomy professionals know about this. Otherwise, people are not aware that something like this happens, and don't give too much importance to all of this. So, we had an event, where students could observe the phenomenon freely."

Manasi Phadke, who came at Tilak Smarak said, "I got my kids to see this and it is a very good experience for them. We got to observe something very different. I appreciate the organisers for their voluntary efforts for bringing something like this to the citizens."

Siddharth Birmal, a member of the organising team told dna, "This phenomenon is witnessed at places which are located between 23.5 degree north and 23.5 degree south longitude. According to the India Standard Time, this was witnessed in Pune at 12.31 pm."

Team dna visited Tilak Smarak Mandir, where Jyotirvidya Parisansta had organised a display to observe the phenomenon. We observed that some of the objects placed on a horizontal glass sheet and their shadows fell beneath the sheet. At 12.31, the shadow of the objects were at a minimum, which lasted for a few seconds.

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### अनोखी दुनिया...

गुरुवार पेठ : ज्योतिर्विद्या परिसंस्थेतर्फे मोमीनपुरामध्ये शुक्रवारी आयोजित आकाशदर्शन कार्यक्रमात दुर्विणीतून उत्सुकतेने चंद्र, तारे पाहण्यात दंग झालेले विद्यार्थी. या वेळी शिक्षण हक्क मंच, न्यूनिक फाउंडेशन व बज्म-ए-खिदमत उर्दू या संस्थांचे पदाधिकारी.



केसरीवाडा : गुरू व शुक्र या ग्रहांची युती पाहण्यासाठी बुधवारी पुणेकरांची झालेली गर्दी.

## गुरू-शुक्राच्या युतीची उत्सुकता

पुणे, ता. १ : गुरूचे चंद्र आणि शुक्राची कोर पाहण्याची उत्सुकता... दुर्विणीतून ग्रहांना पाहताना निरीक्षण करण्याची मिळालेली सुवर्णसंधी, असे आगळे-वेगळे निमित्त १५ वर्षांनंतर खगोलप्रेमींनी बुधवारी सापले.

ज्योतिर्विद्या परिसंस्थेने सूर्यमालेतील गुरू व शुक्र या ग्रहांची युती दुर्विणीतून पाहण्याची संधी उपलब्ध करून दिली. ही युती दुर्विणीतून पाहण्यासाठी प्रत्येकजण

उत्सुक होता. आठ व सहा इंचाच्या दुर्विणीतून पुणेकरांनी हे अविस्मरणीय दृश्य पाहिले. या वेळी अवघ्या वीस मिनिटांच्या अंतरावर गुरू व शुक्र हे ग्रह जवळ आले होते. सध्या सिंह राशीत असलेले हे दोन्ही ग्रह बुधवारी परस्परपासून ०.३ अंश एवढ्या लघुकोनात जवळ आले. सूर्यास्तानंतर पश्चिमेस पाहिल्यानंतर त्यांचे दर्शन घडले. गुरू ग्रह शुक्राच्या वरच्या वाजूस दिसत होता. या ग्रहांसोबतच

गुरूचे चार चंद्रही पाहता आले. सुमारे ५०० खगोलप्रेमींना ही संधी मिळाली. यावावत संकेत शेड्डीवार म्हणाला, "ग्रहांना पाहून खूप आनंद वाटला. अशी सुवर्णसंधी कधीतरी मिळते, त्यामुळे मी या संधीचा लाभ घेतला." केसरीवाडा येथे सायंकाळी सहा ते आठ यावेळेत पुन्हा ही युती पाहण्याची संधी मिळणार असल्याची माहिती परिसंस्थेचे उपाध्यक्ष दीपक जोशी यांनी दिली.

## पिधान युती...



चंद्र आणि रोहिणी नक्षत्रांची पिधान युती सोमवारी पाहाण्यास पिढ्याली. 'ज्योतिर्विद्या परिसंस्थे' तर्फे ही युती पाहण्याची संधी टिळक रस्त्यावरील न्यू इंग्लिश स्कूलच्या प्रांगणात उपलब्ध करून दिली होती. (दुसऱ्या छायाचित्रात) पिधान युती सुटल्यानंतर 'सकाळ'चे पाठक विश्वास वेळ यांनी टिपलेले छायाचित्र.

## चंद्र, रोहिणी नक्षत्रांचा लपंडाव



पिधान युती सुटल्यानंतरचे दृश्य.

पुणे, ता. १४ : चंद्र आणि रोहिणी नक्षत्रांचा लपंडाव आणि पिधान युतीची अनुभूती शेकडो पुणेकरांनी सोमवारी रात्री

साडेआठच्या सुमारास पेटली. आकाश निरभ्र असल्यामुळे अनेकांना रोहिणी नक्षत्राच्या जवळून चंद्र जात असल्याचे दुर्बिणीद्वारे

पाहता आले. रात्री सव्वाद्विधा सुमारास रोहिणी नक्षत्र चंद्राआड गेले आणि आठ वाजून ५९ मिनिटांनी ते चंद्राच्या खालच्या बाजूने बाहेर पडले. या वर्षी २१ सप्टेंबर आणि १५ नोव्हेंबरला देखील याच नक्षत्र ताऱ्याची पिधान युती अनुभवता येणार असल्याचे खगोलशास्त्रज्ञांचे म्हणणे आहे.

ज्योतिर्विद्या प्रतिष्ठानच्या वतीने टिळक मार्गवरील न्यू इंग्लिश स्कूलच्या मैदानात दुर्बिणीच्या साहाय्याने स्क्रीनवर ही युती पाहण्याची व्यवस्था केली होती. अवकाश निरीक्षणाची आवड असलेल्या अनेकांनी या ठिकाणी गर्दी केली होती. रात्री आठच्या सुमारास रोहिणी नक्षत्र चंद्राच्या जवळ आले. दर दहा मिनिटांनी या दोघांतील अंतर कमी-कमी होत असल्याचे जाणवत

होते. पिधान युतीच्या काही सेकंद आधी चंद्र आणि रोहिणी नक्षत्र हे अगदी जवळ आल्याचे दिसले आणि क्षणातच रोहिणी नक्षत्र चंद्रापेठे लपले. काही वेळांने रोहिणी चंद्राच्या प्रकाशित भागातून रस्त बाहेर आले आणि परत या दोघांतील वेगाने वाढत गेलेले अंतर निरीक्षकांना नोंदविले. शालेय विद्यार्थ्यांसह महाविद्यालयीन तरुणांनीही आकाश निरीक्षणाचा आनंद लुटला. याच वर्षी २१ सप्टेंबर आणि मग १५ नोव्हेंबर या दिवशी होणारे पिधान युती दिसणार असत मुंबईत हे पिधान पुण्याच्या आधी दिसले. पण या दोन्ही वेळी चंद्र प्रकाश खूप जास्त असेल, असे खगोलशास्त्रज्ञ अरविंद परांजपे यांनी सांगितले.



■ सोमवारी रात्री आठपासून आकाशात रोहिणी तारा आणि चंद्राचे 'पिधान' हे दृश्य खगोलप्रेमींनी अनुभवले. टिळक रस्त्यावरील न्यू इंग्लिश स्कूलच्या मैदानावर 'ज्योतिर्विद्या' परिसंस्थेने खास दुर्बिणीच्या माध्यमातून मोठ्या स्क्रीनवर हे दृश्य पाहण्याची व्यवस्था केली होती.

## रोहिणी तारा चंद्राआड लपला

## 'पिधान' पाहण्यासाठी खगोलप्रेमींची गर्दी

पुणे, दि. १४ (प्रतिनिधी) - रात्री आठच्या सुमारास आकाशामध्ये झालेल्या रोहिणी तारा आणि चंद्राचे 'पिधान' पाहण्यासाठी खगोलप्रेमींमध्ये उत्सुकता दिसत होती. 'पिधान'स्थितीत चंद्र हा पृथ्वी आणि रोहिणीमध्ये आला आणि त्यानंतर काही वेळातच रोहिणी तारा चंद्राच्या आड लपला. हे दृश्य अनुभवण्यासाठी न्यू इंग्लिश स्कूलच्या मैदानावर खगोलप्रेमींनी गर्दी केली होती.

हे 'पिधान' नुसत्या डोळ्यांनी दिसत होते. मात्र, अधिक स्पष्ट दिसावे, यासाठी 'ज्योतिर्विद्या' परिसंस्थेने दुर्बिणीच्या माध्यमातून स्क्रीनवर चंद्र आणि रोहिणीचे 'पिधान' पाहण्याची व्यवस्था केली होती. अवकाश निरीक्षणाची आवड असलेल्यांची गर्दी या ठिकाणी झाली. रात्री आठच्या सुमारास रोहिणी तारा चंद्राच्या जवळ आला. दर १० मिनिटांनी या दोघांतील अंतर

कमी होत गेले. 'पिधान'च्या काही सेकंद आधी दोघे जवळजवळ चिकटलेले भासले आणि क्षणातच रोहिणी तारा चंद्रापागे लपला. काही वेळांने रोहिणी तारा चंद्राच्या प्रकाशित भागातून परत बाहेर आला आणि परत दोघांतील वेगाने वाढत गेलेले अंतर निरीक्षकांना स्पष्ट दिसले. शालेय विद्यार्थ्यांची, महाविद्यालयीन तरुणांची आकाश निरीक्षणाचा आनंद घेतला. याचवर्षी २१ सप्टेंबर आणि मग १५ नोव्हेंबर रोजी याच ताऱ्याचे 'पिधान' हिंदुस्थानातून दिसणार आहे. मुंबईत हे 'पिधान' पुण्याच्या आधी दिसले. तसेच, हे 'पिधान' फक्त उच्च हिंदुस्थानातूनच दिसणार आहे. हे 'पिधान' पाहण्यासाठी रोहिणी तारा ओळखता आला पाहिजे असे नाई साधारणपणे रात्री सातच्या सुमारास चंद्रकोरीच्या वर पण डावीकडे रोहिणी नक्षत्र सहज लक्षात येईल, असे खगोलतज्ञ डॉ. अरविंद परांजपे यांनी सांगितले.