

# *Belgo-Indian Network for Astronomy and astrophysics (BINA)*

*from Birth to Adulthood (?)*



3<sup>rd</sup> BINA workshop  
22-24 March 2023, Bhimtal, India



विज्ञान एवं प्रौद्योगिकी विभाग  
DEPARTMENT OF  
SCIENCE & TECHNOLOGY

Peter De Cat  
Royal Observatory of Belgium



**Subject:** Re: KASC WG3: K2 mission and other updates (reminder)  
**Date:** Mon, 27 Jan 2014 09:25:19 +0530 (IST)  
**From:** Dr. Santosh Joshi <santosh@aries.res.in>  
**To:** Peter De Cat <Peter.DeCat@oma.be>

Hi Peter,  
Please let me know if you are interested in the following programme:

[http://www.dst.gov.in/whats\\_new/whats\\_new13/cop\\_belcall2014.pdf](http://www.dst.gov.in/whats_new/whats_new13/cop_belcall2014.pdf)

Regards

Santosh

(<http://www.aries.res.in>)

**Subject:** Indo-Belgian Research and Technology Cooperation  
**Date:** Tue, 28 Jan 2014 10:59:37  
**From:** Peter De Cat <Peter.DeCat@oma.be>  
**To:** Dr. Santosh Joshi <santosh@aries.res.in>

Dear Dr. Santosh Joshi,

Thank you very much for your message! Unfortunately it ended up in the spam mail so I didn't see it immediately! (to be on the safe side, please also send a copy to my private e-mail: peter-ke@telenet.be)

Yes, we would be very interested to submit such a proposal! We already submitted a proposal last year in collaboration with Prof. Ram Sagar in view of the DOT telescope (and the Belgian guaranteed time) but unfortunately our proposal was not successful... However, we would like to try again this year so it would be very nice to collaborate with you!

From the Belgian side, two institutes are participating:

- \* Royal Observatory of Belgium (Patricia Lampens, Yves Frémat and myself),
- \* Université de Liège (Jean Surdej).

Is there anybody else from your institute that would like to join our team? Do you know colleagues from other Indian institutes that would be interested? What are the main scientific topics you are working on? What kind of network activities would you like to introduce in the proposal?

Thanks again for your proposition. We still have one month to prepare a proposal. Let's hope we will have the opportunity to start a fruitful collaboration!

Kind regards,  
Peter

cc. Patricia Lampens, Yves Frémat, Jean Surdej

## Indo-Belgian telescopes

Located in India

Constructed in Belgium

3.6-m DOT  
(BELSPO investment)

4-m ILMT

© Jean Surdej



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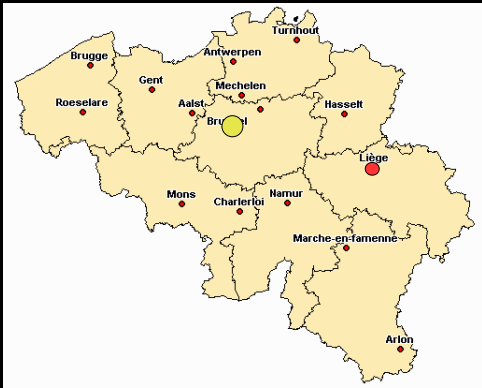
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# BINA: Infancy

Phase 1 (2014-2018)



→ Belgian partners (PI: Peter De Cat)

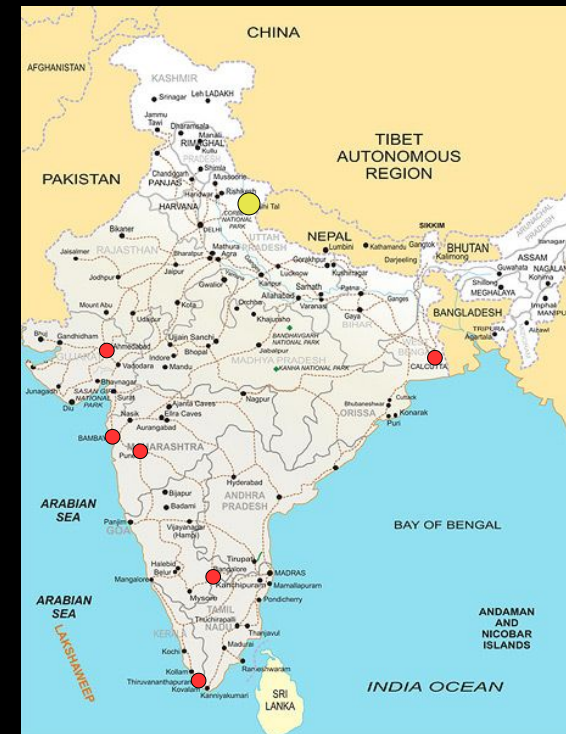
- ROB (Royal Observatory of Belgium; Brussels)
- ULiège (Université de Liège; Liège)



→ Indian partners (PI: Santosh Joshi)

- ARIES (Aryabhata Research Institute of Observational Sciences; Nainital)
- IIA (Indian Institute of Astrophysics; Bangalore)
- IIST (Indian Institute of Space Science & Technology; Trivandrum)
- IUCAA (Inter-University Centre for Astronomy and Astrophysics; Pune)
- PRL (Physical Research Laboratory; Ahmadabad)
- SNBNCBS (S.N. Bose National Centre for Basic Sciences; Kolkata)
- TIFR (Tata Institute of Fundamental Research; Mumbai)

Focus on instrument development



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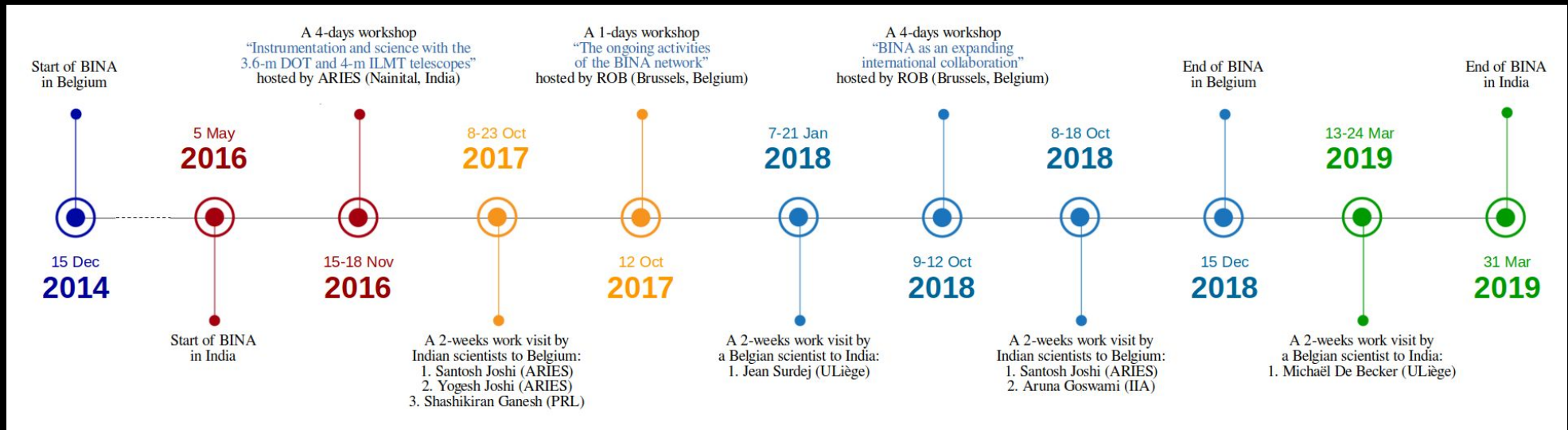
## Phase 1 (2014-2018)

### → Network activities

- Workshops: 4-days in India + 4-days in Belgium
- Work visits: 6 × 1-week India to Belgium  
3 × 1-week Belgium to India

Belgian Science Policy Office  
(BELSPO; Govt. of Belgium)

International Division, Department of Science and Technology  
(DST; Govt. of India)



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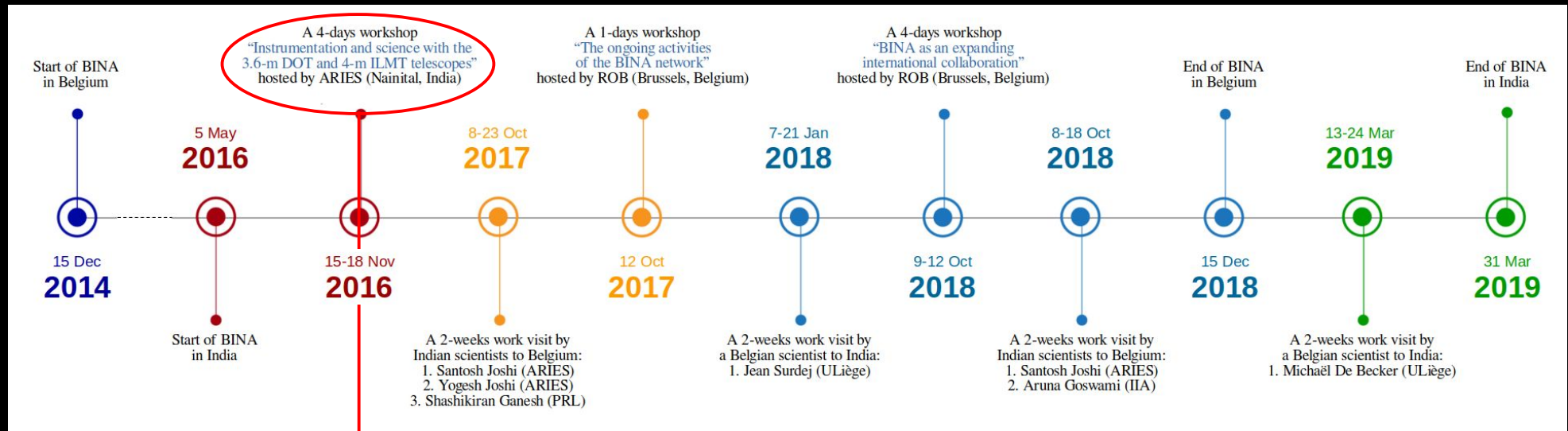
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### → 1<sup>st</sup> BINA workshop (15-18 November 2016; Nainital, India)

- "Instrumentation and science with the 3.6-m DOT and 4-m ILMT telescopes"
  - ✓ Description of first-generation back-end instruments for DOT
  - ✓ Introduction ongoing astronomical projects in both countries⇒ new collaborations

**BINA = Indo-Belgian observational astronomy with DOT + ILMT**



3<sup>rd</sup> BINA workshop  
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# BINA: Childhood

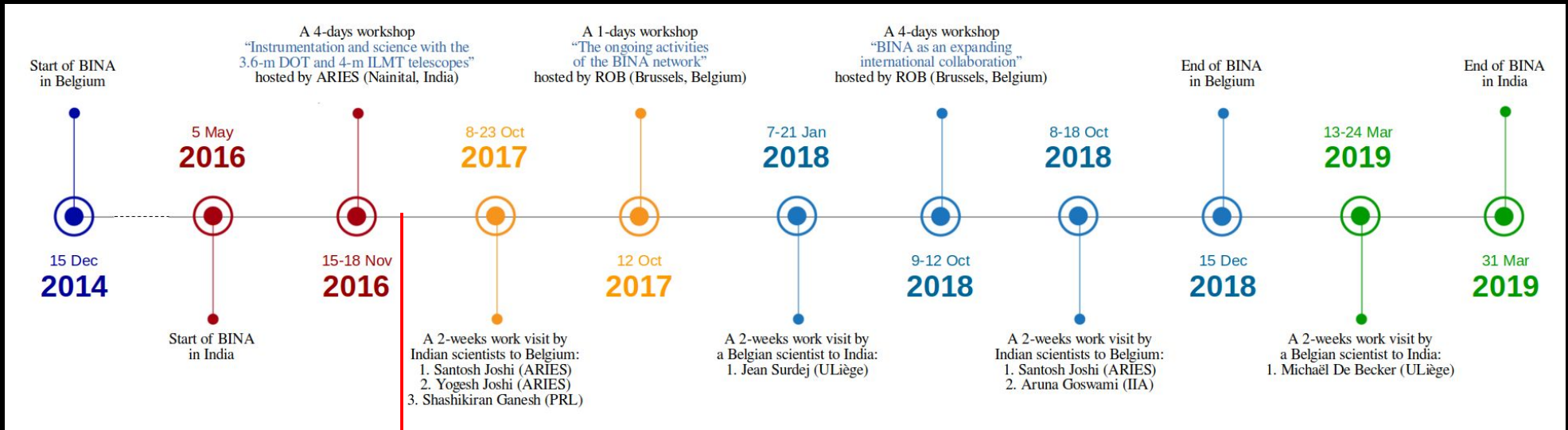
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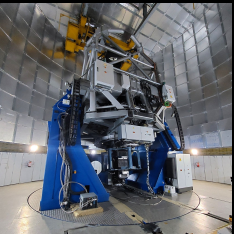
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### → Start of scientific observations with DOT (1 April 2017)



- IMAGER optical imaging 2017A-Early-Science
- TIRCAM2 near-infrared imaging (permanent side-port1) 2017A-Early-Science
- ADFOSC low-resolution spectroscopy + camera (main port) DOT-2020-C1
- TANSPEC medium-resolution spectroscopy + camera (main port) DOT-2020-C1
- HRS high-resolution spectrograph DOT-2024-C2?



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# BINA: Adolescence

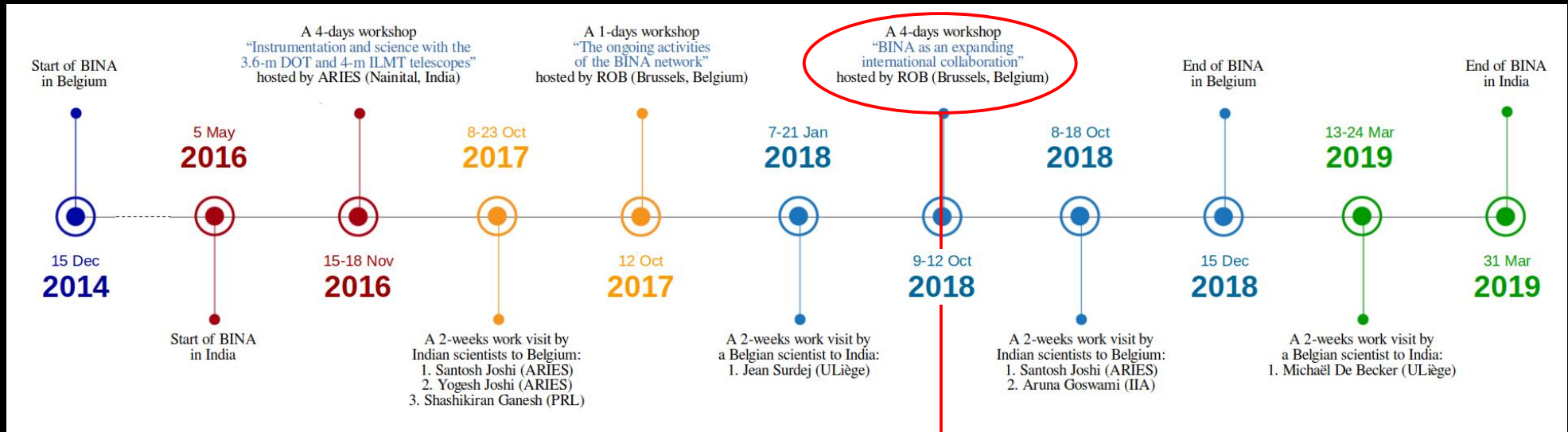
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### → 2<sup>nd</sup> BINA workshop (9-12 October 2018; Brussels, Belgium)

- "BINA as an expanding international collaboration"
  - ✓ First results based on DOT observations
  - ✓ Introduction of science with telescopes accessible through partner institutes

**BINA = Indo-Belgian observational astronomy with DOT + ILMT + telescopes of interest**



3<sup>rd</sup> BINA workshop  
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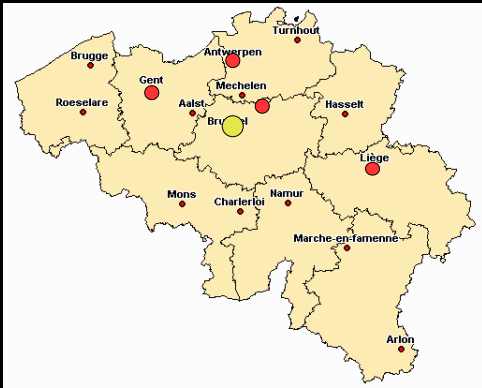
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# BINA: Adolescence

Phase 2 (2018-2023)



## → Belgian partners (PI: Peter De Cat)

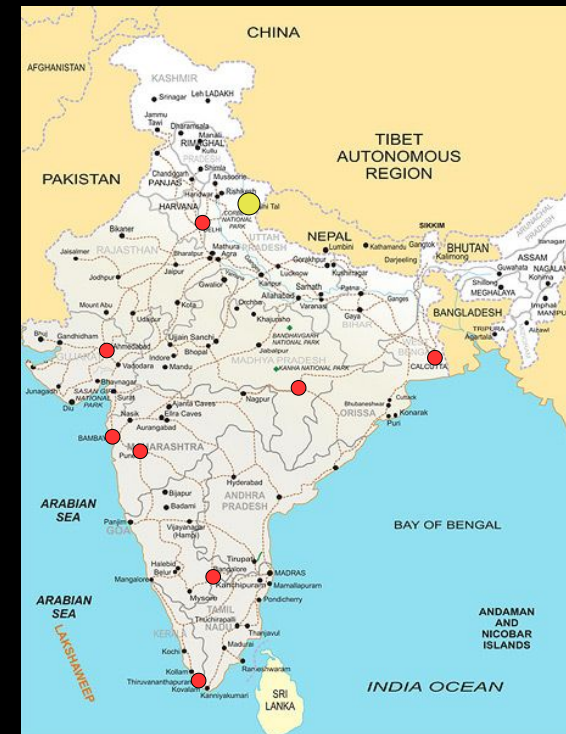
- ROB (Royal Observatory of Belgium; Brussels)
- KU Leuven (Katholieke Universiteit Leuven)
- UAntwerp (Universiteit Antwerpen)
- UGent (Universiteit Gent)
- ULB (Université Libre de Bruxelles)
- ULiège (Université de Liège; Liège)



## → Indian partners (PI: Santosh Joshi)

- ARIES (Aryabhata Research Institute of Observational Sciences; Nainital)
- DU (Delhi University; Delhi)
- HBCSE (Homi Bhabha Centre for Science Education; Mumbai)
- IIA (Indian Institute of Astrophysics; Bangalore)
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- ISRO (ISRO Satellite Centre; Bangalore)
- IUCAA (Inter-University Centre for Astronomy and Astrophysics; Pune)
- KU (Kumaun University; Nainital)
- NCRA (National Center for Radio Astrophysics; Pune)
- PRL (Physical Research Laboratory; Ahmadabad)
- RSU (Pt. Ravi Shankar University; Raipur)
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Focus on scientific projects



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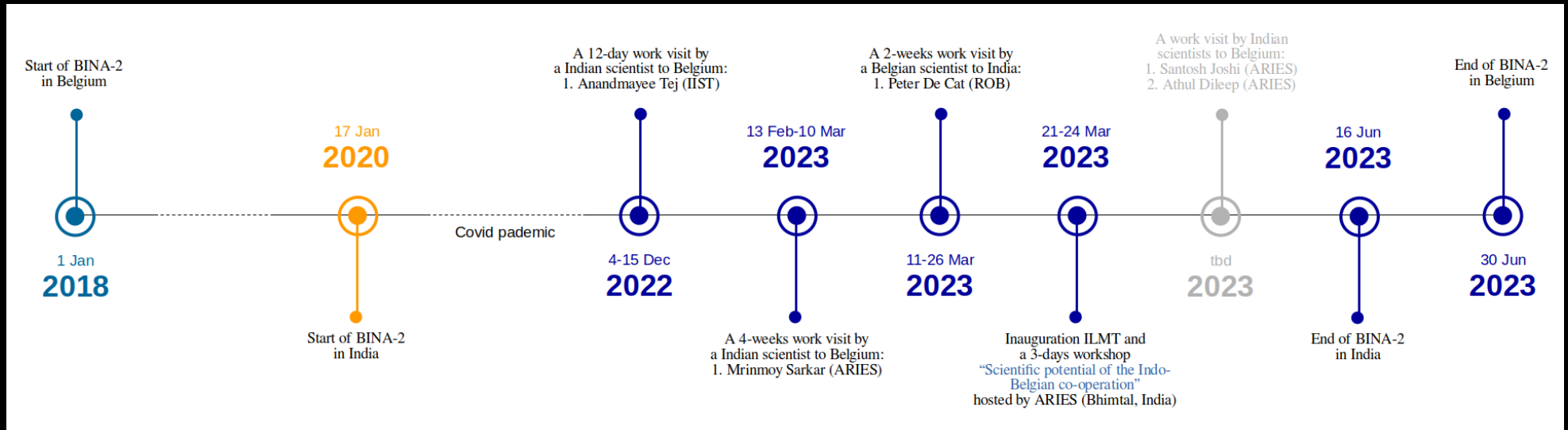


## → Network activities

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# BINA: Adulthood (?)

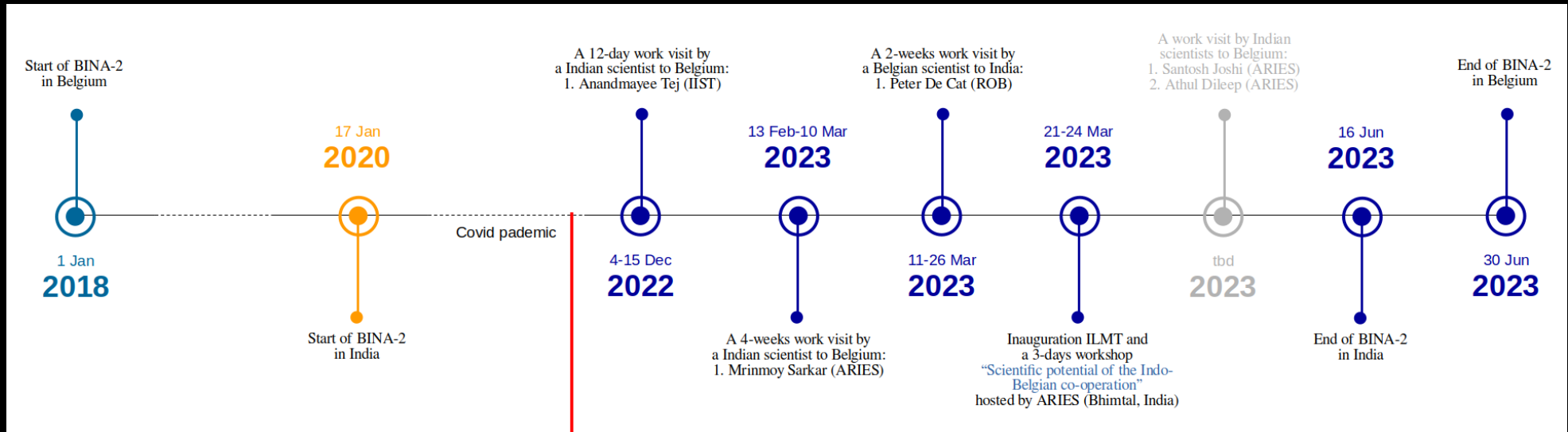
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### → BIPASS (01/04/2022-31/03/2025 in Belgium; waiting for clearance in India)

- “Belgo-Indian projects on Precision Astronomical spectroscopy for Stellar and Solar system bodies” → PI’s: Laurent Mahy (ROB, Belgium) & Shashikiran Ganesh (PRL, India)
- ✓ Optimization data products existing and upcoming spectrographs
- ✓ Chemical composition of solar system bodies & stars in different evolutionary stages metallicity regimes



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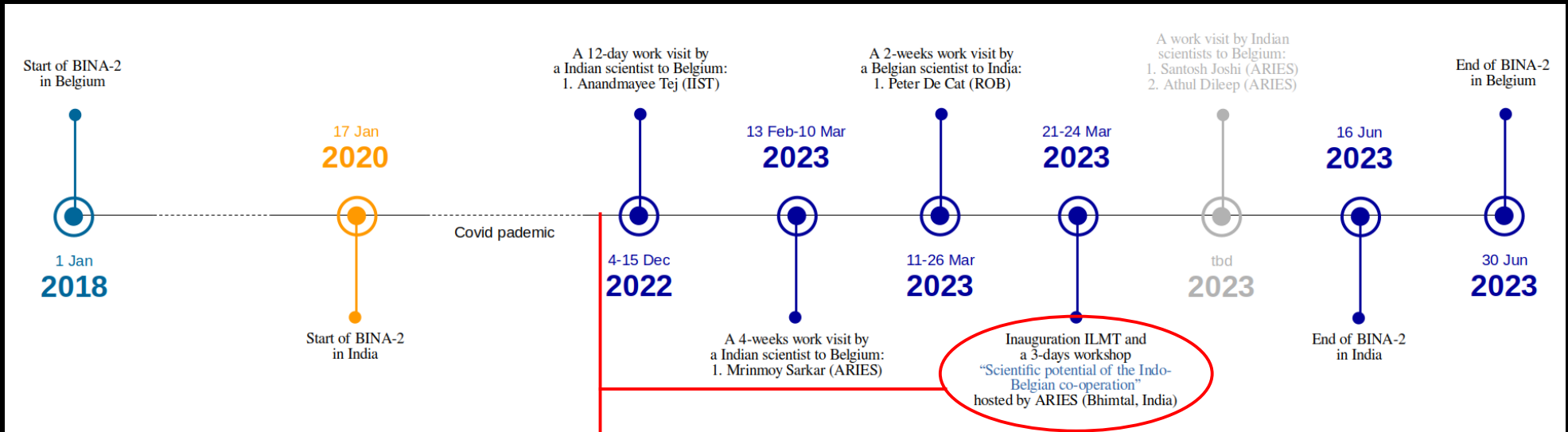
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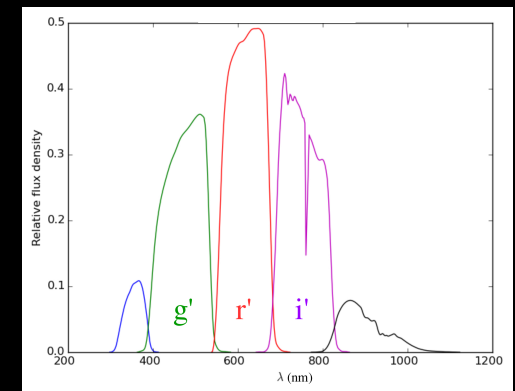
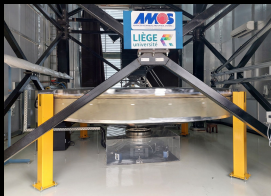
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→ First light of ILMT (29/04/2022)

→ Inauguration ILMT (21/03/2023)



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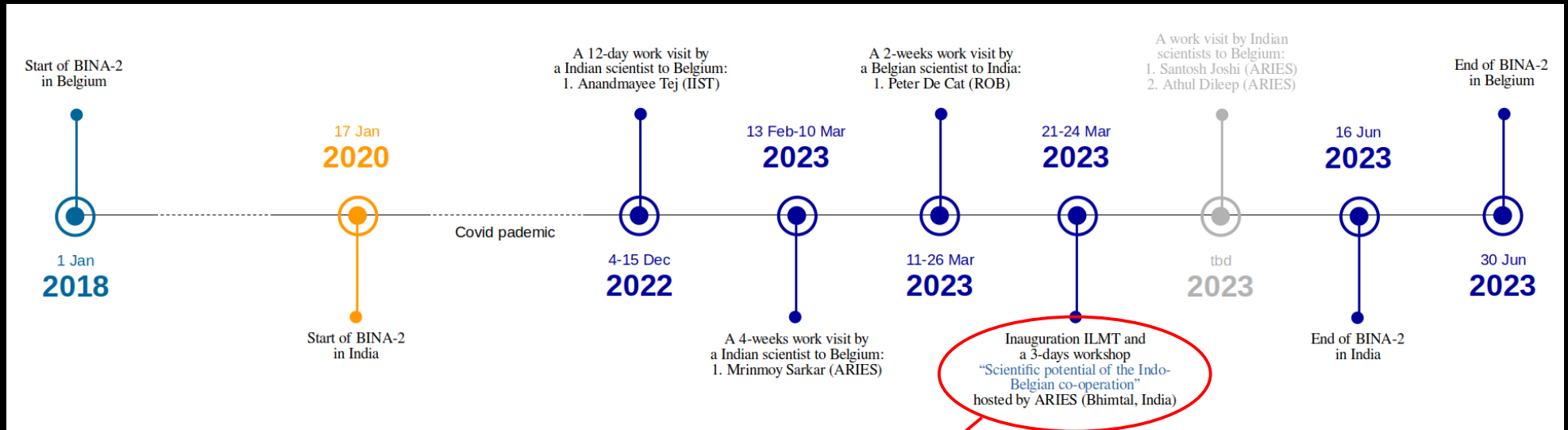
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### → 3<sup>rd</sup> BINA workshop (22-24 March 2023; Bhimtal, India)

- “Scientific potential of the Indo-Belgian co-operation”
  - ✓ Main session: physics of wealth of celestial objects (from solar system objects to galaxies)
  - ✓ Splinter session: physics of the Sun
  - ✓ Splinter session: public outreach and education



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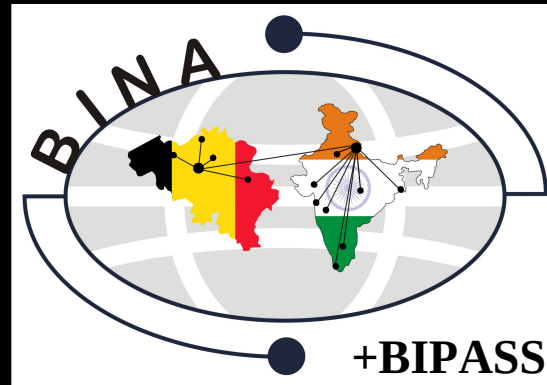
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# Long term view on BINA

## • Belgium

- ROB (P. De Cat & L. Mahy)
- ULiège (M. De Becker)
- UAntwerpen
- KULeuven
- UGent
- ULB
- VUB



## • India

- ARIES (S. Joshi)
- DU
- HBCSE
- IIA
- IIST
- ISRO
- IUCCA
- KU
- NCRA
- PRL (S. Ganesh)
- RSU
- SNBNCBS
- TIFR
- UOC

## Belgo-Indian Network for Astronomy and astrophysics

*gather all joint Indo-Belgian initiatives related to astronomy and space science*

### Network activities

BINA-1  
BINA-2  
BIPASS  
(DST/BELSPO)

### PhD students

Mrinmoy Sarkar (ARIES)  
Athul Dileep (ARIES)  
Bhavya Ailawadhi (ARIES)  
Naveen Dukiya (ARIES)  
Vibhore Negi (ARIES)  
Kumar Pranshu (ARIES)  
Monalisa Dubey (ARIES)

Nikita Rawat (ARIES)  
Anindya Saha (IIST)  
Brajesh Kumar (ULiège)  
Bikram Pradhan (ULiège)  
Otto Trust (Mbarara, Uganda)

### Post-docs

Bharti Arora (ULiège)  
Priyanka Jalan (Warsaw)

**Joint funding?**



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