

**Fourth Advanced Arab Astrophysics School (Arab Adv\_4)**  
**Kottamia Astronomical Observatory, Egypt**  
**October 18 -24, 2024**

**Arrival Friday, Oct. 18, Excursion or Departure Thursday, Oct. 24**

**Scientific Program**

| Time                            | DAY 1<br>Saturday 19 October   |   |
|---------------------------------|--|---|
| 8:00 - 9:00                     | Breakfast & Logistics  |   |
| 9:00- 11:00                     | Registration   |   |
| 11:00 – 12:00                   | <b>Opening Ceremony: Chair: Hadia Selim</b><br><b>Prof. Taha RabeH - NRIAG President</b><br><b>Prof. Ashraf Shaker - Astronomy Department Chair</b><br><b>Dr. Fouad Sefyani–ArAS SfA Delegate Director</b><br><b>Prof. Hadia Selim – SSAS Director, SOC/ LOC Chair</b> |   |
| 12:00 – 12:30                   | <i>Coffee Break</i>  |   |
| <i>Chair: Prof. Priya Hasan</i> |  |   |
| 12:30 – 13:30                   | Interacting Galaxies   | <b>Prof. Yasser Hassan</b>                          |
| 13:30 - 14:30                   | Practical Session: Interacting Galaxies  | <b>Prof. Yasser Hassan</b>                          |
| 14:30 – 16:00                   | <i>Lunch</i>   |   |
| 16:00 – 17:00                   | Introduction to Supernova events   | <b>Dr. Massimo Della Valle</b>                      |
| 17:00 - 18:00                   | Classical Novae astrophysics   | <b>Dr. Luca Izzo</b>                                |
| 18:00 – 19:00                   | Introduction to long-slit spectroscopy   | <b>Dr. Luca Izzo</b>                                |
| 19:00 – 20:00                   | Dinner   |   |
| 20:00 – 23:00                   | Observations using Kottamia telescope  | <b>Team&amp; Dr. Luca Izzo or/&amp; Dr. Massimo</b> |

| Time                            | DAY 2<br>Sunday 20 October  |   |
|---------------------------------|---|---|
| 8:00 – 9:00                     | Breakfast   |   |
| <i>Chair: Dr. Fouad Sefyani</i> |   |   |
| 9:00 – 10:00                    | Supernova classification  | <b>Dr. Massimo Della Valle</b>            |
| 10:00 - 11:00                   | Spectroscopy of supernovae  | <b>Dr. Luca Izzo</b>                      |
| 11:00 – 12:30                   | Numerical Experiments in Stellar Structure and Nucleosynthesis                    | <b>Prof. M. Nouh</b>                      |
| 12:30 – 13:00                   | <i>Coffee Break</i>   |   |
| 13:00 - 14:30                   | Practical Session: Numerical Experiments in Stellar Structure and Nucleosynthesis | <b>Prof. M. Nouh</b>                      |
| 14:30 – 16:00                   | <i>Lunch</i>  |   |
| 16:00 – 17:00                   | Gamma-ray burst-supernova connection  | <b>Dr. Massimo Della Valle</b>            |
| 17:00 – 19:00                   | Analysis of supernova spectra   | <b>Dr. Luca Izzo</b>                      |
| 19:00 – 20:30                   | <i>Dinner</i>   |   |
| 20:30 – 23:00                   | Group Work  | <b>Dr. Luca Izzo or/&amp; Dr. Massimo</b> |

| Time           | DAY 3<br>Monday 21 October  |   |
|----------------|---|---|
| 8:00 – 9:00    | Breakfast   |   |
|                | <i>Chair: Dr. Fouad Sefyani</i>   |   |
| 9:00 – 10:00   | Stellar Evolution   | Prof. Priya Hasan                                     |
| 10:00 – 11:00  | Photometry of Star Clusters: Theory   | Prof. Priya Hasan                                     |
| 11:00 – 11:30  | <i>Coffee Break</i>   |   |
| 11:300 – 13:00 | From Pre-main Sequence Delta Scuti to Giant Cepheids Stars There are Ambiguity in The Evolutionary Stage      | Prof. Mohamed A. A. Rezk                              |
| 13:00 – 14:30  | Photometry of Star Clusters: Lab Session with Python  | Prof. Priya Hasan                                     |
| 14:30 – 16:00  | <i>Lunch</i>  |   |
| 16:00 – 17:00  | Introduction to cosmological concepts I   | Prof. David Valls-Gabaud                              |
| 17:00 – 18:00  | Tutorial on cosmological calculations using python - Photometry, luminosities, spectra, distances to galaxies | Prof. David Valls-Gabaud                              |
| 18:00 – 19:00  | Introduction to cosmological concepts II  | Prof. David Valls-Gabaud                              |
| 19:00 – 20:30  | <i>Dinner</i>   |   |
| 20:30 – 23:00  | Observations using Kottamiatelescope  | Team& Prof. Priya Hasan or/& Prof. David Valls-Gabaud |

| Time                                   |  | DAY 4<br>Tuesday 22 October                  |  |
|--|--|--|--|
| 8:00 – 9:00                            | Breakfast  |  |  |
| <i>Chair: Prof. David Valls-Gabaud</i> |  |  |  |
| 09:00 – 10:00                          | Dynamics of Star Clusters: Theory  | Prof. Priya Hasan                            |  |
| 10:00 – 11:00                          | Dynamics of Star Clusters: Lab session with nbody6   | Prof. Priya Hasan                            |  |
| 11:00 – 11:30                          | Coffee Break   |  |  |
| 11:30 – 12:30                          | Studying Eclipsing Binary Stars  | Dr. Ahmed Shokry                             |  |
| 12:30 – 14:30                          | Practical Session: Analysis of Eclipsing Binary system using Observation of Kottamia Telescope   | Dr. Ahmed Shokry                             |  |
| 14:30 - 16:00                          | Lunch  |  |  |
| 16:00 – 17:00                          | Tutorial on PHOEBE and eclipsing binary systems  | Prof. David Valls-Gabaud                     |  |
| 17:00 – 18:00                          | Radio Telescope and Spectroscopic Telescope  | Dr.Fouad Sefyani                             |  |
| 18:00 – 19:00                          | Tutorial on radioastronomy (here I plan that students use several antennas and they will observe themselves atomic gas at 21 cm in our Galaxy) | Prof. David Valls-Gabaud                     |  |
| 19:00 – 20:00                          | Dinner   |  |  |
| 20:00 – 23:00                          | Work Groups  | Prof. David Valls-Gabaud & Prof. Priya Hasan |  |

| Time                            | DAY 5<br>Wednesday 23 October   |                                  |
|---------------------------------|---|----------------------------------|
| 8:00 – 9:00                     | Breakfast   |                                  |
| <i>Chair: Prof. Priya Hasan</i> |   |                                  |
| 10:00 – 11:00                   | Star clusters in the Gaia Era:  | <b>Prof. Priya Hasan</b>         |
| 11:00 – 11:30                   | <i>Coffee Break</i>   |                                  |
| 11:30 – 12:30                   | Instrumentation of Kottamia Astronomical Observatory and its current Capabilities | <b>Dr. Mohammed Ismael</b>       |
| 12:30 – 14:30                   | Practical Session:  | <b>Prof. David Valls- Gabaud</b> |
| 14:30 – 16:00                   | <i>Lunch</i>  |                                  |
| 16:00 – 18:00                   | Poster Session : How to present your results in a scientific paper                |                                  |
| 18:00 – 21:00                   | Closing Ceremony and <i>Dinner</i>  |                                  |

| Thursday 24 October           |  |
|-------------------------------|--|
| <i>Excursion or Departure</i> |  |