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## MASS Winter School 2024/2025

25<sup>th</sup> – 28<sup>th</sup> February 2025

Location: University of Rome “Tor Vergata”

# Hands-on activity on spectroscopic data reduction

<b>February 25<sup>th</sup>, 2025 - Morning</b>	<b>February 25<sup>th</sup>, 2025 - Afternoon</b>
Aula 17	Aula 17
09:00–09:30 <i>Welcome</i>	13:00–14:30 <i>Lunch</i> (in Aula Paoluzi)
09:30–11:00 <b>Perspective Talk 1:</b> Mercury: the planet, its magnetosphere, its exosphere (A. Milillo INAF-IAPS)	14:30–16:00 <b>Hands-on session 1:</b> Opening a FITS file → Header and data. Multiple images. Infos and data value representation. Raw Data quick look. (CREW)
11:00–11:30 <i>Coffee Break</i> (in Aula Paoluzi)	16:00–16:30 <i>Coffee Break</i> (in Aula Paoluzi)
11:30–12:15 <b>Intro Talk 2:</b> THEMIS: a small Cassegrain telescope (L. Giovannelli UNITOV)	16:30–18:00 <b>Hands-on session 2:</b> Observation strategy → Observing condition representation → Ephemerides and TAA (CREW)
12:15–13:00 <b>Intro Talk 3:</b> Instrumentation: Echelle Spectrograph. Scanning slit. → Examples of the observed spectrum (V. D’Orazi UNITOV)	

<p><b>February 26<sup>th</sup>, 2025 - Morning</b> Aula 17</p> <p>09:30–11:00 <b>Intro Talk 4:</b> Mercury Spectrum → Reflected solar spectrum and the Sodium emission line (D. Del Moro UNITOV and V. Mangano INAF-IAPS)</p> <p>11:00–11:30 <i>Coffee break</i> (in Aula Paoluzi)</p> <p>11:30–12:15 <b>Intro Talk 5:</b> CCD imaging and calibration (F. Berrilli UNITOV)</p> <p>12:15–13:00 <b>Hands-on session 3:</b> Dark Current + Flat fielding (CREW)</p>	<p><b>February 26<sup>th</sup>, 2025 - Afternoon</b> Aula 17</p> <p>13:00–14:30 <i>Lunch</i> (in Aula Paoluzi)</p> <p>14:30–16:00 <b>Hands-on session 4:</b> Wavelength calibration → least squares fitting (Solar Atlas to background telluric lines) (CREW)</p> <p>16:00–16:30 <i>Coffee break</i> (in Aula Paoluzi)</p> <p>16,30–17:15: <b>Hands-on session 5:</b> Sky background subtraction (CREW)</p> <p>17:15–18:00 <b>Hands-on session 6:</b> Mercury Spectrum isolation → Doppler velocity Estimation (validation against Ephemerides) (CREW)</p>
<p><b>February 27<sup>th</sup>, 2025 - Morning</b> Aula 19</p> <p>09:30–10:00 Thesis Info Day</p> <p>10:00–10:30 Thesis Info Day</p> <p>10:30–11:00 Thesis Info Day</p> <p>11:00–11:30 <i>Coffee break</i> (in Aula Paoluzi)</p> <p>11:30–12:00 Thesis Info Day</p> <p>12:15–13:00 Students' presentations</p>	<p><b>February 27<sup>th</sup>, 2025 - Afternoon</b> Aula 19</p> <p>13:00–14:30 <i>Lunch</i> (in Aula Paoluzi)</p> <p>14:30–15:35 Students' presentations</p> <p>15:35–16:30 <i>Coffee break</i> (in Aula Paoluzi)</p> <p>16:30–18:00 <i>MASS BOARD MEETING with External Advisory Panel and Head of Selection Committee</i> (in Saletta fisica della Materia)</p>
<p><b>February 28<sup>th</sup>, 2025 - Morning</b> Aula 17</p> <p>09:30–10:15 <b>Hands-on session 7:</b> Emission Line fitting → Non-linear fitting of a Gaussian or Lorentzian function (CREW)</p> <p>10:15–11:00 <b>Hands-on session 8:</b> Creating images from the fitting parameters (CREW)</p> <p>11:00–11:30 <i>Coffee break</i> (in Aula Paoluzi)</p> <p>11:30–12:15 <b>Hands-on session 8:</b> Creating images from the fitting parameters (CREW)</p> <p>12:15–13:00 <b>Hands-on session 9:</b> Image interpolation to squared pixels (CREW)</p>	<p><b>February 28<sup>th</sup>, 2025 - Afternoon</b> Aula 17</p> <p>13:00–14:30 <i>Lunch</i> (in Aula Paoluzi)</p> <p>14:30–15:15 <b>Perspective Talk 6:</b> THEMIS/Bepi Colombo Mercury observation during the flyby (V. Mangano INAF-IAPS)</p> <p>15:15–16:00 Open Discussion</p> <p>16:00–16:30 <i>Coffee break</i> (in Aula Paoluzi)</p> <p>16:30–17:30 Open Discussion and Closing Remarks</p> <p>17:30 The Close</p>