



# «Laboratori e facilities» @ Inaf-OATs field of expertise and activities

Igor Coretti on behalf of

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# Laboratories

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- Test & measurement for electronics and RF
  - Generic setup for test & measurement of prototypes of control systems, digital and analog electronics systems
    - Power supplies, oscilloscopes, oscilloscope with protocol analyzer, logic state analyzer, signal and function generators, switch matrix,
  - Power supply test
    - Current probes, power meter
  - Automated tests (LabVIEW controlled instruments)
  - RF measurements and test up to 4 GHz
    - Spectrum analyzer with tracking generator, RF generator, Power probes

# Laboratories

- Hardware integration
  - Tools for assembly of subsystems
    - Generic electronics lab
    - Integration Hall
    - Mechanical workshop
    - Lifting tools
  
- Upcoming
  - Climatic chamber for environmental tests



# Laboratories

- Experience gained from
  - ESO instrumentation (Xshooter, ESPRESSO, FORS-Up, CUBES, ANDES) and others
  - Local instrumentation (Trieste Solar Radio Spectropolarimeter, SVAS)
- Expertise
  - Control systems and instrumentation control
    - Full system assembly and integration
    - Mechanical structure
    - Cabling
    - Testing
    - Performance test
    - RF diagnosis and performance test
  - Design capabilities → see session on “HW e SW strumentale”
- Long term survival possible only with dedicated personnel assigned to lab facilities !



# People & Expertise

## Electronics / hardware



*Igor Coretti*



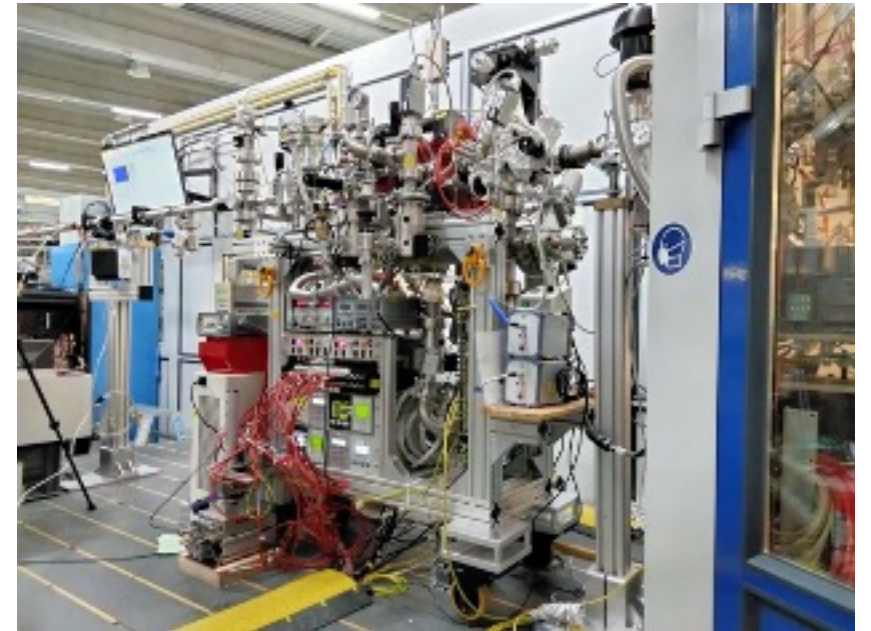
*Veronica Baldini.*



*Antonio Sulich*

# Facilities

- Electron Beam Ion Trap Experience
  - An Electron beam ion trap (EBIT) is an instrumental set-up to produce highly charged ions (HCIs) by means of a focussed electron beam, and confine them to let them be investigated, or exploited in further collisions with different targets. HCI are relatively abundant in a variety of gaseous astrophysical environments, such as the galaxies Interstellar Medium (ISM), CGM and IGM
  - A good knowledge of energy transitions and cross sections is mandatory to fully exploit the next X-ray high resolution spectrometer on board XRISM and Athena (XIFU). In fact, the first and unique observation at high resolution done by the Hitomi microcalorimeter clearly showed that the main limitation to the full exploitation of X-ray high resolution data is the accuracy in the knowledge of the atomic transitions



# Facilities

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- Electron Beam Ion Trap Experience
  - **A new EBIT** can exploit the highly performant synchrotron radiation beam presently available Elettra, initially at the GasPhase beamline of Elettra (Trieste, I), and after the upgrade to Elettra 2.0, at the MOST beamline. The new EBIT can allow critical measurements for N, C, O, Ne, S, Si low and high ionization ions thus providing a solid building block for Athena XIFU exploitation
  - People : Fabrizio Fiore, Fabrizio Nicastro