



ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DEPARTMENT OF PHYSICS AND ASTRONOMY
"AUGUSTO RIGHI"

The informal interview will be held in English and will be based on the following topics, whose knowledge is considered fundamental to successfully follow the Master program:

- Hydrostatic equilibrium
- Gas pressure and equation of state + Physics of degenerate matter
- Thermo-nuclear reactions
- Energy transport and gas thermodynamics + Radiative transfer
- The structure of spectral lines
- Black body radiation (based on radiative transfer)
- Bremsstrahlung (from thermal plasma)
- Synchrotron radiation from a magnetized relativistic plasma
- Thomson, Compton & Inverse Compton scattering

Possible reference textbooks (but the same concepts can be found in any physics and astrophysics textbook):

- *"An introduction to Modern Astrophysics"*, by B.W. Carroll & D.A Ostlie
- *"Radiative processes in Astrophysics"*, by G.B. Rybicki & A.P. Lightman

If you need more information, contact the Director of the Master Program: Prof. Cristian Vignali (cristian.vignali@unibo.it)