

Massive Stars: From \hat{I}_{\pm} to \hat{I}_{\odot}

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Rhodes, Greece

The conference will build on results from ongoing large-scale multi-wavelength surveys of massive stars which are being coupled with new theoretical advances dealing with stellar evolution and the processes which effect that evolution: mass-loss, rotation, convection, magnetic fields, multiplicity and environment. It will tackle important problems from birth, through main sequence evolution and until core collapse. There will be a strong focus on relating the major theoretical uncertainties afflicting stellar evolution through these phases to the current observational picture.

The impetus for this focus is derived from the realization that our understanding of massive star evolution is severely challenged by new observations powered largely by technological advances in telescopes and instrumentation. This has enabled new ways of looking at old long-standing problems enabling large-scale high-quality surveys of resolved stellar populations (e.g the FLAMES and MiMeS Surveys). As theoretical approaches try to keep pace with this increase in information the cracks in our assumptions concerning stellar evolution have become more apparent, even glaring. Whereas before it might have been possible to understand some of the stars some of the time it is now clear that understanding stellar populations is a considerable challenge and will require substantial efforts to resolve.

This is an exciting time as observations have revealed large gaps in understanding of the formation and evolution of massive stars. The huge impact that massive stars have on their immediate environment, parent galaxies, and through the Universe, demands better understanding of massive star evolution from alpha to Omega.

Scientific Program Topics:

- Â· New observational & theoretical results from large-scale surveys (FLAMES, MiMeS, PanSTARRS, PTF), techniques (astrometry) and computation.
- Â· Consequences of zero-age conditions on stellar evolution
- Â· Massive star environments, massive clusters, dynamical evolution, runaway stars and mergers
- Â· The importance of binaries for populations of massive stars
- Â· The upper end of the IMF and the role of mergers
- Â· Massive-star magnetism and pulsation, evolutionary consequences
- Â· The role and evolution of stellar rotation across the H-R diagram
- Â· Mass-loss across the H-R diagram and episodic mass-loss from LBVs and other transients
- Â· Constraints from endpoints
- Â· Massive stars at very low metallicity

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