



## ICTS Astrophysics & Relativity Seminar (HYBRID)

**Title** : The origin for WNL stars: impact on ionizing photon budgets

**Speaker** : Arpita Roy (Scuola Normale Superiore, Italy)

**Date** : Thursday, 12<sup>th</sup> October, 2023

**Time** : 03:30 PM (IST)

**Abstract** : Massive stars, while less numerous than their lower-mass counterparts, are the primary sources of ionizing photons, yields, and mechanical luminosity. A comprehensive understanding of these stars' structure and evolution is crucial for elucidating the chemical and ionization evolution of galaxies over cosmic time. Today's talk focuses on slowly rotating WNL stars, with high surface helium and nitrogen enrichments, a puzzling subset of massive stars. Previous hypotheses posited exotic spin-down mechanisms to explain their unusually high surface enrichments, but we propose a more natural explanation. These stars are metal-rich ( $[Fe/H] \geq -1.0$ ) massive stars and therefore even the modest mass-loss can reveal their "fossil" convective cores enriching surfaces with CNO-byproducts He and N. I will also discuss how our simulated spectra of these stars align well with observed WNL stars. I will further discuss the implications of these stars in understanding the origin of nebular HeII in star-forming galaxies

**Venue** : **Offline:** Emmy Noether Seminar Room (ICTS)

**Online:** Please click the below link to join the seminar

<https://icts-res-in.zoom.us/j/85849464246?pwd=arbsE3TeeQbr29IXmzRhQ8pDhJmpfB.1>