

# The Pre-supernova Circumstellar Medium around Massive Stars

S. M. Chiță

Astronomical Institute, Utrecht University, Netherlands

Massive stars interact with their surroundings by emitting winds and ionizing photons. Here, we simulate the evolution of the circumstellar medium around stars of 12  $M_{\odot}$ , from their birth up to the supernova stage. These stars are expected to expand at least twice into red supergiants (RSGs), with intermediate hot stages where fast winds are emitted. We utilize the stellar parameters as function of time from detailed stellar evolution calculations as input for our hydrodynamic models.