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Linking the observed surface abundances of stars to the initial abundance values is crucial to unveiling the chemical evolution history of galaxies. Red giant branch (RGB) stars are considered to be particularly good probes, because they can reach very high luminosities, hence they are resolvable also in relatively distant galaxies. The start of the RGB represents the end of core hydrogen (H)-burning, followed by an episode of significant convective mixing over all layers between the core and the stellar surface.

RGB observations in nearby star clusters, whose initial chemical composition can be inferred from other types of stars, show that some additional mechanism beyond standard convection (accounted for in stellar models) alters the RGB surface abundances.

It is generally hypothesised that thermohaline mixing, a process already known in oceanography and laboratory experiments, is responsible for this extra mixing, due to a local molecular weight gradient inversion from ^{3}He fusion developing in the radiatively stable stellar interiors, located between the hydrogen fusion shell and the convective envelope. This work in progress aims at modelling thermohaline mixing in RGB stars using a well established stellar evolution simulation code (BaSTI) developed at the ARI in collaboration with the observatory of Abruzzo (Italy). These first preliminary results will show the development of the thermohaline mixing in a RGB model and the calculation of the associated diffusion coefficient.