

Mapping the Galactic Habitable Zone

G. Murante¹, L. Silva¹, P. Monaco², G. Vladilo^{1,2}

The astrobiological community is becoming more and more interested in the search for extraterrestrial, and extra-solar life. The question whether preferential places exist, in a galaxy like ours, where such a (complex) life could dwell is thus very intriguing. In the past this problem has been addressed using chemical evolution models of the Galaxy. Till recently, cosmological numerical simulations of galaxy formation and evolution failed to produce galaxies similar to ours; this is not the case anymore. Using state-of-the-art simulations of disk galaxies, we thus produce spatial maps of the Galactic Habitable Zone (GHZ) at the present epoch. In such simulations, we have detailed informations on the present and past spatial distribution of stars and metals; this type of information is not found in chemical evolution models. At variance with classic studies of the GHZ, we pay particular attention in exploiting the peculiar informations we have from numerical simulations. In particular, we focus on the impact on Galactic habitability of the Supernovae danger factor integrated in space and time.

¹ INAF-OATs, Trieste, Italy

² Trieste University, Department of Physics