



ID de Contribution: 57

Type: Non spécifié

M. Palla: GRB hosts identification through chemical abundances

mardi 4 juin 2019 18:10 (10 minutes)

We try to identify the nature of high redshift long Gamma-Ray Bursts (LGRBs) host galaxies by comparing the observed abundance ratios in the interstellar medium with detailed chemical evolution models accounting for the presence of dust. What we have done is to compare abundance data from LGRB afterglow spectra to abundance patterns as predicted by our models for different galaxy types (irregulars, spirals, ellipticals). We analysed in particular $[X/Fe]$ abundance ratios as functions of $[Fe/H]$. Different galaxies are, in fact, characterised by different star formation histories, which produce different $[X/Fe]$ ratios ("time-delay model"). This allows us to identify the morphology of the hosts and to infer their age (i.e. the time elapsed from the beginning of star formation) at the time of the GRB events. Relative to previous works, we use newer models in which we adopt updated stellar yields and prescriptions for dust production, accretion and destruction. In the sample considered we found host galaxies of all the morphological types. The calculated ages of the host galaxies span from the order of 10 Myr to little more than 1 Gyr.

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Classification de Session: Students' presentations