ID 297

Tipo de Comunicación: Poster

Sesión Científica: Galaxias y cosmologia

Titulo: The radio luminosity function of supernova remnants in local galaxies

Nombre (Autor que presenta): Naím

Apellidos (Autor que presenta): Ramírez Olivencia

Apellidos y nombre de los autores: Pérez-Torres, Miguel Ángel; Alberdi, Antxón

Resumen:

We investigate the existence of a universal radio luminosity function (LF) for supernova remnants (SNRs) in local galaxies, and the possible relations among the parameters characterising the LF and the relevant physical parameters of the host galaxies, namely the (global) star-formation rate (SFR) and interstellar medium (ISM) density. We used publicly available data from the literature to constrain the radio LF of SNRs at 1.4 GHz. We used a cumulative histogram and a variable bin size approach to deal with the typically small data samples available, and then applied standard Monte Carlo techniques to estimate the relevant physical parameters and their uncertainties. We find that the radio LF of SNRs in our sample can be well described by a single power law n = A x L^beta) with a universal index beta = -2.31 +or- 0.03. This value is already corrected for SNR incompleteness, and does not include the effect of starburst galaxies in the sample. For each individual galaxy, the values of beta are close to the universal one. We also find that A is proportional to the star-formation rate (SFR) as A proportional to SFR ^0.87. On the other hand, we find that A is not directly linked to ISM density. We also stress that our method, which we apply here to the specific field of SNRs, is of general applicability and is more robust than previous approaches followed to obtain reliable LFs in this and other fields. We conclude that there exists a universal radio LF for SNRs in normal, non-starbursting galaxies. The power law radio LF n = A x L^beta), has a rather steep index (beta approx -2.30). We also conclude that A is a direct tracer of star-forming activity, but not of the ISM density.