

2.10 Supernovae radio emission

Orellana, Mariana¹ & Bersten, Melina²

1 - Universidad Nacional de Río Negro, Argentina

2 - Instituto de Astrofísica de La Plata, Argentina

Abstract: Supernovae are powerful stellar explosions that mark the final stage in the evolution of some stars. They are extremely luminous events that can be detected out to cosmological distances. Their study has an intricate connection with various astrophysical topics, and therefore they have deserved large investments in terms of observational campaigns. We study them from a complementary perspective, trying to explain optical observations by deriving the physical properties of the explosions and the stellar progenitors. After applying a 1D radiation-hydrodynamic code with a long history of results already published, we can estimate the thermal emission that is channeled to radio wavelengths. As found by other studies, this component is not enough to explain most of the observed SNe that have been monitored so far by different radio telescopes. In order to understand radio emission, interaction with circumstellar material seems to be very relevant. Our prospects, in the near future, are to develop calculations that provide non-thermal luminosities that our code does not currently estimate. Based on the literature, we discuss what kind of assumptions are needed to achieve that goal. Our focus will be directed to the emission produced by supernovae explosions at the low-frequency energy range (100 MHz - 2 GHz) proposed for future facilities that will operate in our country.