

Title: Life after death: The high energy emission from supernova remnants interacting with molecular clouds.

Abstract: Supernova remnants (SNRs) are the structures that result from the explosive end of a massive star. They play an important role in the dynamics of the interstellar medium (ISM), and highlight the complex interaction of stellar ejecta with the surrounding environment. The expanding shock-front produced by the supernova explosion heats stellar ejecta and swept-up ISM to X-ray emitting temperatures. Apart from sweeping up and heating material, the shock-front of an SNR can also accelerate a population of relativistic particles, resulting in non-thermal X-rays and gamma-rays. For SNRs that are born in regions of high density, the interaction between the SNR with this dense molecular material has a profound effect on the morphology and emission properties of these objects. In this talk, I will review the importance of studying these SNRs and their properties. In particular, I will highlight investigations into the high energy emission of these remnants using X-ray and gamma-ray satellites which give an insight into the original progenitor, the properties of the surrounding environment and their abilities to accelerate particles.