Z113r   Now and the Future of Broadband Modeling of SNRs

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Confronted by the increasing quantity, quality and variety of observational data across the entire electromagnetic spectrum, SNR models nowadays must satisfy a set of constraints more stringent than ever. A self-consistent treatment of the vast and complex network of thermal and non-thermal physics involved in SNRs can no longer be considered a luxury but rather a necessity. In this occasion, I will overview the current status of broadband modeling for SNRs of young to dynamically evolved ages and its impacts so far on our understanding of particle acceleration at astrophysical shocks. I will also illustrate how ongoing efforts on connecting state-of-the-art supernova explosion simulations and SNR models will pave the future path towards understanding the physics and astrophysics of exploded stars 'from engine to remnant'.