# Executive summary

## Cosmic rays in the GeV-TeV energy range from two types of supernovae

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In recent years, several new properties of cosmic rays have been revealed by AMS-02 and other current experiments that have severely challenged our understanding of the acceleration and propagation of cosmic ray particles in the Galaxy. One such property is the different spectral shapes between the primary cosmic-ray species -- protons exhibiting the steepest spectrum followed by neon, magnesium and silicon nuclei, and then helium, carbon, oxygen and iron nuclei showing the hardest spectra. Diffusive shock acceleration theory and the nature of cosmic-ray propagation in the Galaxy predict an index that is independent of the type and charge of the nuclei. In this work, we present an explanation based on two-component model for the origin of cosmic rays in the Galaxy. The first component originating from regular supernova remnants in the interstellar medium and the second component from Wolf-Rayet supernovae. Using knowledge about cosmic-ray injection enhancement at supernova shocks in the uniform interstellar medium and in the wind environment of Wolf-Rayet stars, we show that the combination of the two components may explained most of the behavior observed by the AMS-02 experiment.