Title

Teleios (G305.4·2.2) · The perfect Galactic Supernova Remnant?

Abstract

A new Supernova Remnant (SNR) candidate, G305.4·2.2, has been discovered in the Australian Square Kilometre Array Pathfinder (ASKAP) Evolutionary Map of the Universe (EMU) survey. This candidate, nick-named Teleios, displays several unusual morphological properties, the most striking being its almost perfectly spherical shape. It also displays an unusually low surface brightness, one of the lowest observed in any SNR. This suggests an older age, with a minimum age estimate of ·1000 years. This scenario of an SNR retaining its spherical shape as it ages is unusual and would likely require expansion into an extremely homogeneous and/or rarefied environment. We propose to use MeerKAT·s high resolution, sensitivity, wide frequency bandwidth, and polarisation capabilities to confirm Teleios· identity as an SNR, investigate its unusual nature and probe the surrounding environment. This will enable us to understand the environmental factors necessary to maintain such an unusually spherical shape and further constrain Teleios· nature and physical properties.