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# Spectral and Morphological Fitting of Young Pulsar Wind Nebulae using a Markov-Chain-Monte-Carlo Procedure

*Wednesday, 27 June 2018 14:00 (20 minutes)*

We present results from a spatio-temporal leptonic emission code that models the spectral energy distribution (SED) from and the radiation spectrum at different positions in a pulsar wind nebula (PWN). The model includes a time- and spatially-dependent magnetic field, spatially-dependent bulk particle speed implying convection and adiabatic losses, diffusion, as well as radiative losses and can predict the SED, surface brightness vs. radius and thus the nebular size as function of energy. We apply the code to PWN G0.9+0.1 and a fit for both the SED and PWN size as a function of energy. We use a Markov-chain-Monte-Carlo (MCMC) method to find not only the best fit but also errors on these best-fit model parameters. We will investigate the error behaviour when only fitting the SED vs. concurrently fitting both the SED and energy-dependent size. Our model will contribute to interpreting results by the future Cherenkov Telescope Array (CTA) that will yield many more morphological details.

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C Venter
NWU
christo.venter7@gmail.com

**Primary author:** VAN RENSBURG, Carlo (North West University Potchefstroom)

**Co-authors:** Prof. VENTER, Christo (North-west University, Potchefstroom Campus); Dr KILIAN, Patrick (North-West University); Dr WADIASINGH, Zorawar (SAIP2016 reviewer)

**Presenter:** VAN RENSBURG, Carlo (North West University Potchefstroom)

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