Contribution ID: **368** Type: **Oral Presentation**

A search for optical counterparts of the complex Vela X system

Wednesday, 11 July 2012 16:30 (20 minutes)

Abstract content
   (Max 300 words)

E.T. Marubini1, Dr R.R. Sefako2, Dr C. Venter1 and Prof O. C. de Jager1
1North-West University, Potchefstroom Campus
2South African Astronomical Observatory (SAAO)

The pulsar wind nebula (PWN) associated with the Vela pulsar is a bright source in the radio, X-ray and gamma-ray bands, but not in the optical. This source is very near, lying at a distance of 290 pc, as inferred from the radio and optical parallax measurements of the pulsar. Knowledge of the brightness and structure of the Vela PWN in optical is important in order to constrain the underlying particle spectrum and/or B-field properties and particle losses associated with this extended source. We use results from the Digital Sky Survey, as well as results obtained using the SAAO 1.0 m telescope equipped with an imaging CCD (STE4) and BV filters, in an attempt to measure Vela X optical radiation at these wavelengths. To enlarge our field of view, we constructed a mosaic consisting of 3x3 frames around the pulsar position. We present spectral measurements from H.E.S.S., Fermi LAT, ASCA, HST, and WMAP, in addition to our optical results. Using these data, we investigate whether or not the radio synchrotron component can be smoothly extrapolated to the optical band. This would constrain the electron particle population to consist of either a single or multiple components, representing a significant advancement in our understanding of this complex multiwavelength source.

Apply to be
 consider for a student
   award (Yes / No)?

Yes

Level for award
 (Hons, MSc,
   PhD)?

MSc

Main supervisor (name and email)
and his / her institution

rrs@saao.ac.za
South African Astronomical Observatory (SAAO)

Would you like to <br> submit a short paper <br> for the Conference
 Proceedings (Yes / No)?

yes

Primary author: Mr MARUBINI, Takalani (Attend)

Co-author: Dr VENTER, Christo (Attend)

Presenter: Mr MARUBINI, Takalani (Attend)

Session Classification: Astrophysics

Track Classification: Track D1 - Astrophysics