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## Neutrino Events at IceCube and the Fermi Bubbles

Wednesday, 9 July 2014 14:00 (20 minutes)

**Abstract content**  **(Max 300 words)**  [Formatting & Special chars](http://events.saip.org.za/getFile.py/?target=_blank)

The IceCube Collaboration recently announced twenty-eight events were observed with energies above  $\sim 30$  TeV, more than expected from atmospheric backgrounds. We discuss the detectability of the Fermi Bubbles at IceCube and show that up to 4 – 5 of the 28 events could originate from the Fermi Bubbles (FB). If the observed gamma rays from the FB are created due to the baryonic mechanism, high-energy ( $> \text{GeV}$ ) neutrinos should be emitted as a counterpart. These neutrinos should be detectable as shower or track-like events at a Km<sup>3</sup> neutrino detector. For a hard primary cosmic-ray proton spectrum  $E^{\sup>-2.1\sup>}$  and cutoff energy at or above 10 PeV, the Fermi Bubble flux substantially exceeds the atmospheric backgrounds. For a steeper spectrum  $E^{\sup>-2.3\sup>}$  and/or lower cutoff energy, to observe the neutrino flux at high significance, longer running time will be required.

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

Yes

**Level for award**  **(Hons, MSc,**   **PhD)?**

PhD

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

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

No

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