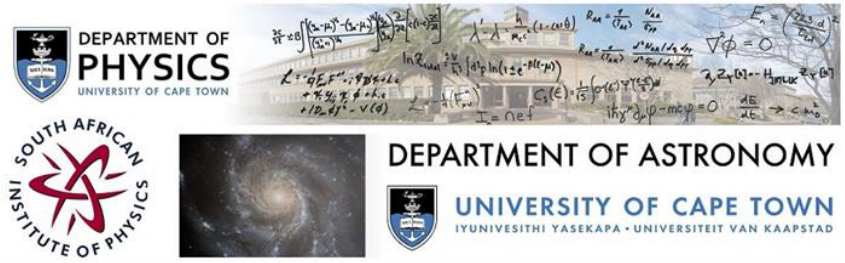

Contribution ID: **360** Type: **Poster Presentation**

Open Quantum System approach to spontaneous formation of prebiotic molecules in interstellar space.

Wednesday, 6 July 2016 16:10 (1h 50m)

Abstract content
   (Max 300 words)
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The past half-century has seen much advancement in the fields of astronomy and astrochemistry, but an emerging field, known as astrobiology, now seeks to answer one of the oldest and most fundamental questions in science: What is life? Prebiotic molecules – those that are proposed to be part of the processes leading to the origin of life – and the formation of nucleobases, in different astrophysical environments, have thus far been the primary area of focus. Recently we have seen the detection of an HCN dimer (H₂C₂N₂) along with possible formation routes leading to Adenine (H₅C₅N₅), one of the nucleobases. In our work we apply an open quantum systems approach to the problem of HCN dimer formation. The temperature of the relevant environment is ˜10K meaning it is quite possible that non-trivial quantum effects may be vital to the process of dimerisation. Following observational data from the Green Bank Telescope we specifically focus on the possibility of spontaneous dimerisation on the surfaces of interstellar ice grains.

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Prof. Johan Van der Walt
Johan.VanDerWalt@nwu.ac.za

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Primary author: Mr ELS, Paul (NWU, Potchefstroom)

Co-authors: Ms MARAIS, Adriana (UKZN); Prof. PETRUCCIONE, Francesco (UKZN); Dr SINAYSKIY, Ilya (University of KwaZulu-Natal and National Institute for Theoretical Physics)

Presenter: Mr ELS, Paul (NWU, Potchefstroom)

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