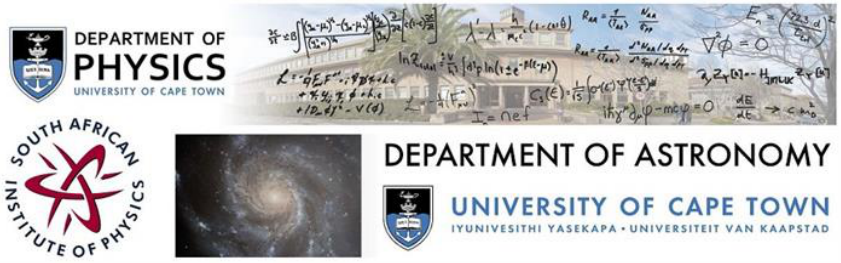

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3D Radiation-Hydro Models of the Circumstellar Environments of Evolved stars

Wednesday, 6 July 2016 11:50 (20 minutes)

Abstract content
   (Max 300 words)
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This work addresses 3D Radiation-Hydro Models of the Circumstellar Environments of Evolved stars". It consists of modeling Asymptotic Giant Branch (AGB) stars that has one or multiple Jupiter-like companions, aiming to understand the morphology of the circumstellar environment of such systems where the star is a mass losing via stellar wind (AGB). For this purpose, we build 3D models of pulsating AGB stars with one or several companions, and we simulate the evolution of these systems using the Smoothed Particle Hydrodynamic (SPH) method. The radiative equilibrium temperature and optical depths are derived for the atmosphere particles in order to simulate dust formation in the circumstellar environment of the AGB star. Dust formation, as well as shocks in the atmosphere are essential for rapid mass loss, hence we added both mechanism to the simulations. The results of our models can help us to explain the morphology of planetary nebulae as well as it serves as a method for exoplanet detection in planetary systems.

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Patricia Whitelock - paw@saao.ac.za
UCT - South African Astronomical Observatory

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Primary author: Mr AYDI, Elias (University of Cape Town - South African Astronomical Observatory)

Co-authors: Prof. WHITELOCK, Patricia (SAAO and UCT); Dr MOHAMED, Shazrene (SAAO)

Presenter: Mr AYDI, Elias (University of Cape Town - South African Astronomical Observatory)

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