



**IAUS-REG-NUMBER:** IAUS-64

**NAME:** Lucero Uscanga

**AFFILIATION:** University of Guanajuato, Mexico

**CONTRIBUTION:** Poster

**TITLE:** Physics of the ionized gas in extremely young planetary nebulae

**AUTHORS:** L. Uscanga (1), J. A. Green (2), J. F. Gómez (3), G. Anglada (3), L. F. Miranda (3), R. A. Cala (3), O. Suárez (5), H. Qiao (5), P. Boumis (6)

**AFFILIATIONS:** (1) University of Guanajuato, Mexico (2) CASS, Australia (3) IAA-CSIC, Spain (4) OCA, France (5) CAS, China (6) NOA, Greece

**ABSTRACT:**

We study the physics of the ionized gas in the last stages of evolution of low-mass stars that end their lives as planetary nebulae (PNe). Specifically, those that are in the earliest stages of the PNe phase. For this purpose, we observed with the Australia Telescope Compact Array the spectral energy distribution (SED) at radio frequencies of a sample of H<sub>2</sub>O-maser emitting PNe. These PNe could be in their earliest phases since H<sub>2</sub>O masers are expected to extinguish shortly after ~100 yr from the end of the asymptotic giant branch phase. Their youth make them key objects for understanding the formation and evolution of PNe. We determined the spectral index of the radio continuum emission of these sources and the turnover frequency of the emission, which could be tied to the age of the sources. The complete SED at radio frequencies would provide us with information on the emission processes (free-free and/or dust thermal emission) and thus, the physical processes driving the transformation of these evolved objects into PNe.