Instituto de Astronomía
Universidad Nacional Autónoma de México
Sede Ensenada, Baja California, México

Seminario de Investigación

Miércoles, 30 de Octubre de 2013
11:00 hrs, Auditorio IA-Ensenada

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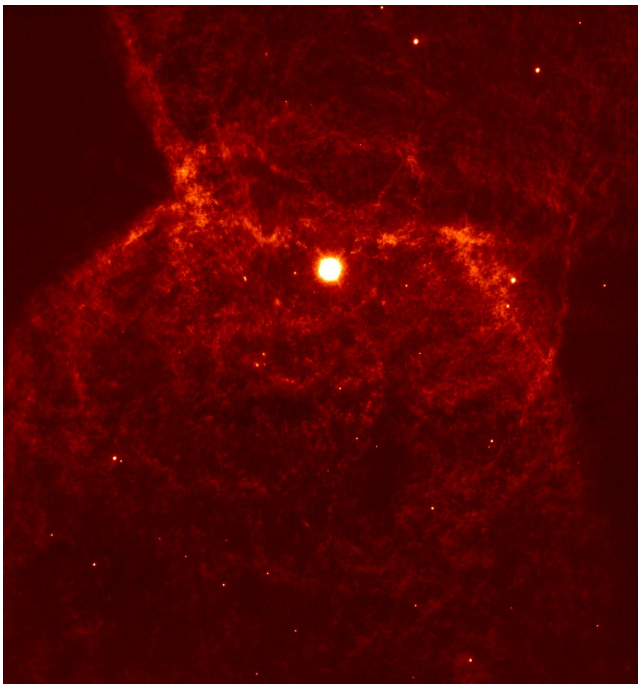
"SUBARCSECOND KNOTS AND FILAMENTS IN THE MOLECULAR HYDROGEN OF THE BIPOLAR PN NGC 2346."



We present high spatial resolution (∼60-90 milliarcseconds) images of the molecular hydrogen emission in the planetary nebula NGC 2346. Molecular hydrogen images in the (1-0)S(1) 2.218μm line were recently obtained during the Scientific Verification of the new instrument at Gemini South; Gemini South Adaptive Optics Imager (GSAOI). GSAOI was used with Gemini Multi-conjugate Adaptive Optics System (GeMS). GSAOI has 2 × 2 mosaic Rockwell HAWAII-2RG 2048 x 2048 arrays as the detector, with a pixel scale of 0.02″/pixel, thus providing a FOV of 85″× 85″. The total exposure time (on-target) was 1200 seconds and the final spatial resolution over the whole FOV (after the combination of 10 dithered positions) was ∼60-90 milliarcseconds. NGC 2346 is at a distance of 700 pc, thus the spatial resolution corresponds to ∼28 Astronomical Units (slightly better than the NGC 2346 Hα image obtained by the HST/WFPC2). With this unprecedented resolution, we were able to resolve for the first time the molecular knots and filaments that are expected to be formed after the fast wind ceases. We find that the evolutionary status of the central star is inconsistent with the dynamical age (2500 yrs), derived from the molecular hydrogen knots and that the mass and orbital separation of the binary is compatible with a system that might have evolved through the common envelope phase.