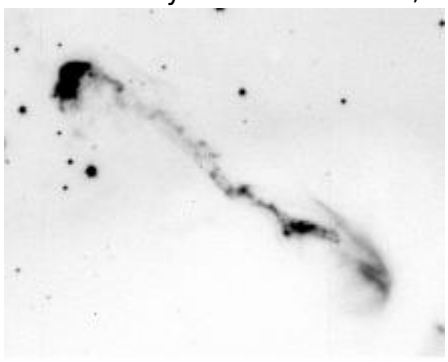
The SOAR Adaptive Optics Module (SAM) takes a sharp look at HH-46/47

Submitted by cbriceno on Wed, 2015-02-25 19:04

 [1]

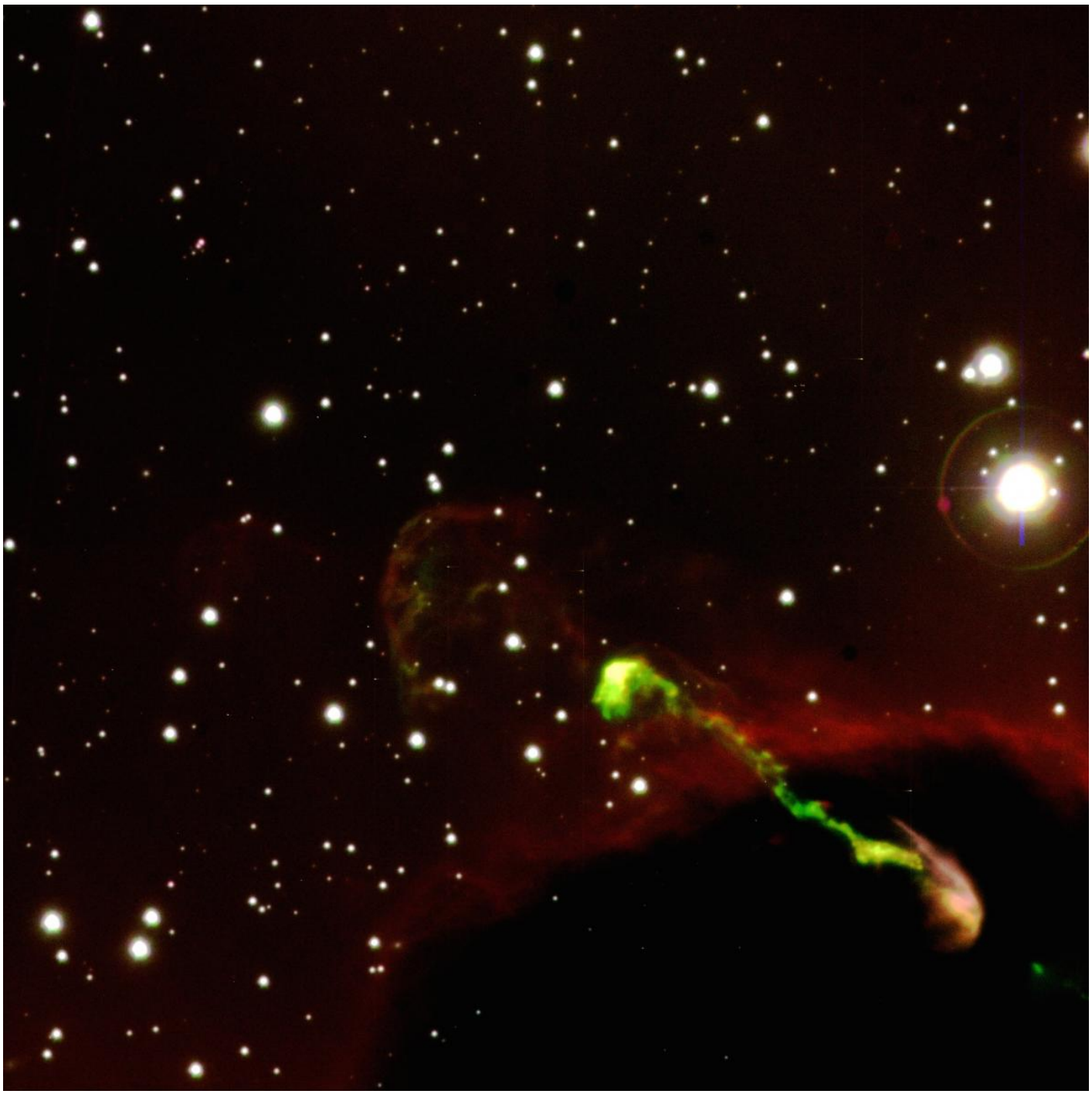
During the night of February 14, 2015, Drs. Cesar Briceño and Steve Heathcote (CTIO) used the SOAR Ground Layer Adaptive Optics Module (SAM) [2] to obtain these ~0.45" FWHM images (under seeing of 0.9") of the Herbig-Haro objects HH 46 and 47, located in the Vela star forming region. Obtained as a pilot observation for their NOAO program 2015A-0296, these are probably the sharpest ground based optical images ever obtained of these objects.

What is known as the HH 46/47 complex includes the jet (seen in green in the SAM image) and the shocked regions where the jet and the related outflow interact with the surrounding environment, traced by the faint reddish emission. The image is 3 arcmin x 3 arcmin, which at the assumed distance of 450 pc corresponds to 0.4 x 0.4 pc. The source of the jet is a young, low-mass star, located roughly at the lower right tip of the jet. Briceño and Heathcote, together with their collaborator Dr. Pat Hartigan (Rice Univ.) will compare their high resolution SAM data with images taken by the Hubble Space Telescope over seven years ago, to measure the motion and dynamics of the jet.

Black and white image: The SAM image of HH 46/47 jet with the [SII] filter shows a complex structure, with several knots. By measuring accurate positions of these faint knots over the years, researchers can obtain information on how fast the jet is moving.

Color image: False color image of the Herbig-Haro object HH-46/47 in the Gum Nebula. This composition

combines 1h exposures in each of Hα and [SII] filters, with 15min in the R-band. Red corresponds to Hα, green is [SII] and blue is the R-band image.



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Links
[1] http://www.ctio.noirlab.edu/soar/sites/default/files/field/image/HH46-47_SAM_14feb2015_SII_comb1_small.jpg
[2] http://www.ctio.noirlab.edu/soar/content/soar-adaptive-optics-module-sam
[3] http://www.ctio.noirlab.edu/soar/news