Multi-Object Spectroscopy in the Next Decade: Big Questions, Large Surveys and Wide Fields
Santa Cruz de La Palma, Canary Islands 2-6 March 2015

MOS MAPPING OF THE NIR OUTFLOW HH 223

R. López[1], J.A. Acosta-Pulido[2,3], R. Estalella[1], G. Gómez[4,2], B. García-Lorenzo[2,3]

[1] *Departament d'Astronomia i Meteorologia (IEEC-UB), Institut de Ciències del Cosmos, U. de Barcelona, Martí i Franquès 1, E-08028 Barcelona, Spain*
[2] *Instituto de Astrofísica de Canarias, E-38200 La Laguna, Spain*
[3] *Departamento de Astrofísica, Universidad de La Laguna, E-38205, Tenerife, Spain*
[4] *GTC Project Office, GRANTECAN S.A. (CALP), E-38712 Breña Baja, La Palma, Spain.*

Abstract

We used the Multi-Object-Spectroscopy (MOS) observing mode of LIRIS to map the near-IR stellar outflow HH 223 in the dark cloud Lynds 723 (L723). HH 223 appears projected on the two lobes of the east-west L723 quadrupolar CO outflow. A radio continuum source (SMA 2), towards the centre of the CO outflow, has been proposed to hide the YSO that powers the east-west CO and HH 223 outflows.

Spectra in the *J*, *H* and *K*-band were obtained using a mask of 16 rectangular slitlets, designed *ad hoc* to map the extended ($\sim 5'$) S-shaped morphology of the outflow emission. From these data we obtained the kinematics of the ionized and neutral gas for the nebular structures of the HH 223 outflow. The spatial distribution of the near-IR and CO emissions match each other. In addition, we derived the 3-D kinematics of the H_2 outflow emission by combining proper motions (obtained from multiepoch images) and radial velocities. A bipolar pattern pointing away from the location of the millimetre source SMA 2 is found, with the knots to the east of SMA 2 moving in a direction opposite to the motions of the knots to the west of SMA 2. Our results confirm that the near-IR nebular knot structures form part of a large-scale, S-shaped near-IR HH 223 outflow that is physically related to the CO outflow, both sharing the outflow exciting source.