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DUST DESTRUCTION AND THERMAL INHOMOGENEITIES IN THE ORION NEBULA. WHAT CAN WE LEARN FROM SHOCKS?

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We present a long-slit spectroscopic analysis of Herbig-Haro 202 and the surrounding gas of the Orion Nebula using the FORS 1 spectrograph of the Very Large Telescope. Given the characteristics of the Orion Nebula, it is the ideal object to study the mechanisms that play a role in the evolution of H II regions, notably dust destruction by interstellar shocks, which is a poorly understood subject. The use of long-slit allowed us to determine the spatial variation in its physical conditions and chemical abundances; our results are consistent with those of previous studies albeit with improved uncertainties in some determinations. Special attention is paid to Iron (Fe) and Oxygen (O) abundances, which show a peak at the brightest part of HH 202, allowing us to estimate that at least 57% of the dust is the destroyed; we also calculate the amount of depletion of oxygen in dust grains, which amounts to 0.12 ± 0.04 dex. Finally we show that O/H abundances determined from collisionally excited lines and recombination lines are irreconcilable at the center of the shock unless thermal inhomogeneities are considered along the line of sight.

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TESTING THE JET-ACCRETION CONNECTION IN YOUNG STELLAR OBJECTS IN THE TIME DOMAIN

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It is known that in the formation of a star, accretion of mass through a circumstellar disk is accompanied by the ejection of a fraction of this material through jets and outflows. It is usually assumed that this fraction is fixed in time, or that it slowly evolves on the star formation timescale of 10^5 to 10^6 yr. But, is this true? Do accretion and ejection follow each other within samples of objects, or in time for a given object? We present preliminary results of a project aimed at testing the relation between accretion and ejection of mass in star formation. The first component of the project looks for radio-jet ejections in young stellar objects (YSOs) known to have accretion-related infrared outbursts. The second component is a radio/IR time monitoring with facilities such as the JVLA and the VLT of a large number of YSOs in some of the nearest star forming clouds.

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