2008 CARMA Summer School

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Current status: PhD student (University of Barcelona, Spain)
Starting date: January 2007
Graduation date (expected): January 2011
Research topic: Massive star formation
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Financial support: Travel expenses will be paied by grants from Estalella

Application to the 2008 CARMA Summer School

This thesis will involve the study of massive star-forming regions with high angular resolutions in order to characterize the spatial properties of the cores where massive stars form, and study the kinematics of the dense gas and molecular outflows. In the first stages of their formation, massive young stellar objects (YSOs) are deeply embedded in cores of dust and gas, and thus they strongly emit at submillimeter and millimeter wavelengths. Furthermore, the massive clouds where massive YSOs form are located at distances $\gtrsim$ 1 kpc, and thus high-angular resolution observations are needed to study with detail their spatial properties. CARMA is a new millimeter array that can provide useful data to get insight the formation of massive stars. As a future user of CARMA, the attendance to this school will allow me to know the working capabilities and technical issues of CARMA, as well as the data reduction process.

In the deadline of March 2008, I submitted a proposal to CARMA (c0247) to map the CO (1–0) outflow emission together with the $C^{17}O$ (1–0) and 3 mm continuum emission in an intermediate/high mass YSO (IRAS 22198+6336). This object is embedded in a dust condensation mapped with a single-dish telescope, does not show near/mid-infrared emission, and drives a young molecular outflow observed in a single-dish telescope, all this suggesting that it is the youngest source of a survey of 10 massive star-forming regions studied with the VLA and the IRAM 30 m telescope (Sánchez-Monge et al. 2008, A&A in press.). The main aim of our proposal is to study the morphology of the molecular outflow, characterize its inclination and collimation, and estimate more accurately the parameters of the outflow. Additionally, from the 3 mm continuum emission we expect to detect a flattened envelope or disk-like structure perpedincular to the outflow.