

## Solar chromospheric dynamics by ALMA observations

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From Cycle-4 of the ALMA proposal period, solar observation capability became open to the community. In the millimeter and sub-millimeter range, the solar chromosphere is a main target for studies. By the continuum thermal emission of the optically thick surface, the temperature distribution of the plasmas in the chromospheric level is expected to be detected. Since still in the early phase of its development for the solar observing capability in the instruments, the spatial resolution is limited to be around 1 arcsec, while the temporal resolution can be achieved up to 2 seconds. This is well in the range to study rapid dynamic phenomena in the solar chromosphere where various interesting magnetohydrodynamic (MHD) processes are expected to occur.

In this talk, we would like to describe the solar observations by using ALMA in Cycle-4 and hopefully the preliminary results from the observations. Among them, our team proposed an observation of chromospheric spicules; the needle-like jets ubiquitously found in the chromosphere, though their driving mechanism is still under debate. By the three-dimensional radiative MHD simulations, Iijima (2016) found that an untwisting motion of magnetic flux bundle could be a good candidate, which mechanism is a similar one to the astronomical jet from an accretion disk.

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