X46a SCUBA2 Lensing Survey

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Strong gravitational lensing is a powerful tool to investigate faint, distant galaxies. With a large magnification factor (μ; e.g., $\times$100), one can observe very faint galaxies, that cannot be observed unless gravitationally magnified. A factor of 100 magnification corresponds to having a factor of 100 larger telescope in diameter. However, such strongly-lensed sources need specific geometric configuration with a massive lens object. Therefore, they are rare, and difficult to be found.

Submm observation is a powerful tool to find strongly-lensed sources. Due to the negative k-correction of the Rayleigh-Jeans tail of the dust component spectral energy distribution (SED), submm flux stays bright even at the distant Universe.

To find new gravitational lens, we have been performing a SCUBA2 survey of massive clusters with $M > 6 \times 10^{14} M_{\odot}$. So far, we have observed 136 of such clusters with SCUBA2. We successfully found 12 lens candidates, for several of which we have taken submm spectra with IRAM 30m telescope. Here, we report our results obtained so far, and the progress of the project.