# Dust grain growth in asymmetrical protoplanetary disk of V1247 Ori

*Kohki Gotoh[1], Misato Fukagawa[2], Takayuki Muto[3]

1. The university of Tokyo, 2. NAOJ, 3. Kogakuin University

It has been known in the planet formation in protoplanetary disks that dust fall into the central star before dust particles grow up to planetesimals assuming the uniform density and temperature distribution in disks. To solve this problem, the hypothesis is proposed, where dust grains are trapped in the pressure maxima and prevented from falling into the central star. In addition, it is thought that the region could work as the place of dust sticking, growing, and finally making planetesimals. V1247 Ori, a Herbig Ae star, is known to have the asymmetrical protoplanetary disk that contains the ring (the distance from the central star is about 54 au) and crescent (the distance from the star is about 120 au) in the ALMA Band 7 (870 micron) continuum observations. In the previous study, dust traps were suggested in the whole region of the crescent and the south-eastern region of the ring due to the hypothetical planet orbiting in the gap between the ring and crescent. In this study, we made the map of the opacity index $\beta$ to evaluate the distribution of dust size using the continuum images with the spatial resolution of 0.09” (about 29 au) at 2.1 mm (Band 4) and 870 micron (Band 7). The signal-to-noise ratio is about 2.7 times larger than the previous study in Band 7. As a result, $\beta$ in the northern part of the crescent is lower than other regions, which indicates that the growth of dust is observed only in the northern region of the crescent. This is inconsistent with the suggestion from the previous study. In this poster presentation, we discuss the properties (such as surface density) and the origin of the candidate dust trap in the asymmetrical protoplanetary disk of V1247 Ori.

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