NIR Direct Imaging of the Debris Disk around HD 15115

Shoko Sai (University of Hyogo), Yoichi Itoh (University of Hyogo), Misato Fukagawa (Osaka University), Hiroshi Shibai (Osaka University), Takahiro Sumi (Osaka University),Thayne Currie (University of Toronto)

Debris disks are circumstellar disks which contain mainly dust produced by planetesimal impacts. Most of debris disks have various characteristic structures –warp, clump, offset--, which are thought to have relation with gravitational interaction between disk and planet. HD 15115 is known as an F2V star having an almost edge-on debris disk of which surface brightness is asymmetric. In addition, the warp structure of the disk is seen by previous direct imaging observation.
We observed HD 15115 with Subaru telescope IRCS and AO188 at the H-band by ADI direct imaging mode. The spatial resolution was 0.1" corresponding to 4.5 AU. A bow shape structure was detected at 1-3" from the star. Additionally the surface brightness increases its slope beyond 2".
We consider that a debris disk with an inner hole is largely inclined and a part of the disk is bright with forward–scattering of dusts. A simple disk model suggests an inner radius of R_{in} =1.8" (83 AU), an inclination of i = 85.6, a Heneyey-Greenstein parameter of g = 0.4, a dust density power-low slope of q = 3.3. The detailed morphology of the disk will be discussed.