

# Spiral Structures in the Protoplanetary Disk around SAO 206462

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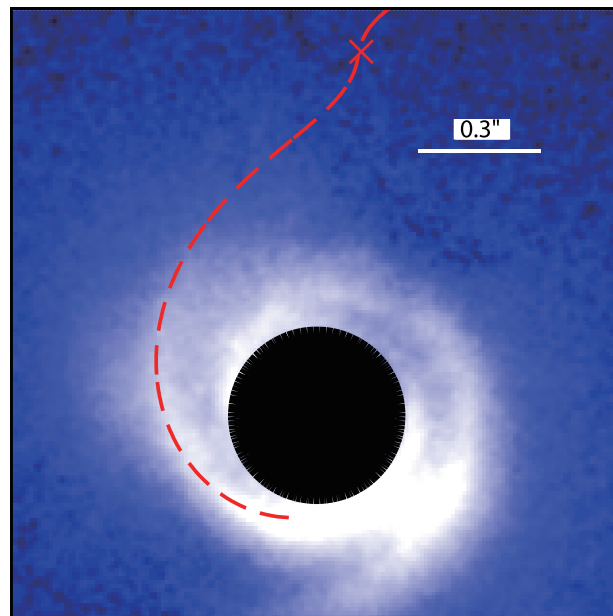
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Understanding physical properties of protoplanetary disks is important in understanding planet formation processes.

We report the results of observations, conducted under SEEDS project, of the disk around SAO 206462 (HD 135344B, F4V,  $d = 140$  pc [1]). We clearly detected the disk in scattered light at  $H$ -band. The most interesting features were the spiral structures (Fig. 1).

Assuming that the spirals were a part of density wave, we constructed the model equation for the spiral structures using spiral density wave theory. As a result, it was indicated that such spirals were able to exist in disks with the temperature profiles that were consistent with other observations. It was also hinted that the launching point (corotation radius) of the spirals might exist in the outer part of the disk.

It is expected that dynamically active disks ubiquitously harbor small-scale spirals. Future observations by large telescopes (ALMA, TMT, etc.) with better spatial resolution will deepen our understanding of protoplanetary disks and planet formation processes.



**Figure 1:**  $H$ -band polarized intensity map of the disk around SAO 206462. The central region ( $r \leq 0.2$  asec) is covered. The red dashed and the red cross indicate the best-fit for the spiral structure and the launching point. This figure is adopted from the front page of *Astronomical Herald* 2013 March issue.

## Reference

[1] Muto, T., et al.: 2012, *ApJ*, **748**, L22.