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周惑星円盤へのガス降着流と周惑星円盤構造 Gas Accretion Flow onto Circum-Planetary Disks and the Disk Structure

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Satellite systems around gas giant planets are thought to be formed in circum-planetary disks, which are believed to exist at the gas capturing growing phase of giant planets. However, the structure of the circum-planetary disks are poorly known and thus current formation theories of satellite systems are forced to be constructed under not-well-established disk structures, which could impact the results.

In this study, we performed a series of hydrodynamic simulations of gas accretion flow onto circum-planetary disks from proto-planetary disks in order to analyze the structure of circum-planetary disks. We found that distribution of gas accretion flux onto the disk is well described by a power-law function of distance from the planet, which will be the basis to construct the circum-planetary disk structures in a steady state.

Keywords: satellites, giant planets, disks, hydrodynamic simulation