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Capture of dusts from hypervelocity collision of planetary materials: Implication for dust size distribution in debris discs¹ SUSUMU TAKASAWA, AKIKO NAKAMURA, Kobe U., TOSHIHIKO KADONO, Osaka U., MASAHIKO ARAKAWA, Kobe U., HIROTSUGU DOHI, Nagoya University, YUSUKE SETO, Kobe U., MAKOTO MAEDA, Hiroshima U., KEISUKE SHIGE-MORI, YOICHIRO HIRONAKA, TATSUHIRO SAKAIYA, TAKAYOSHI SANO, TAKESHI WATARI, SHINSUKE FUJIOKA, Osaka U., SOHSUKE OHNO, Chiba Instit. Tec., TAKU TAKEUCHI, Tokyo Inst. Tech., KAZUYOSHI SANGEN, Kobe U. — In order to examine the size distribution of dust particles from collision of solid bodies, we conducted hypervelocity impact experiments. Sub-mm size metal spheres were accelerated to velocities from 9 to 61 km/s by laser ablation and were shot into rock targets. Dust particles were collected by aerogels and were analyzed by Electron Probe Micro Analyzer (EPMA). We derived the size distributions of ejecta ranging from five to tens of micron in diameter. The slope of cumulative ejecta size distribution was steeper than a purely collisional equilibrium distribution in a collision cascade. This suggests that a steep dust size distribution in a debris disc around an A5V star HD172555 can be due to a hypervelocity impact.

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