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Current problems of meteoroid and debris environment models and related studies of JAXA

Y. Kitazawa (1, 2, 4, 8), S. Fukushige, M. Uchino, Y. Akahoshi (3), T. Goka (4),

A. Sakurai (5), T. Yasaka (5, 6), K. Funakoshi (5), T. Hanada (6), H. Matsumoto(4), T. Noguchi (7), R. Yamanaka, Y. Kimoto, M. Suzuki (4)

(1) IHI Corporation, Tokyo, Japan, (2) JAXA/ISAS, Kanagawa, Japan, (3) Kyushu Institute of Technology, Kita-Kyushu, Japan, (4) JAXA/IAT, Tsukuba, Japan, (5) iQPS Inc., Fukuoka, Japan, (6) Kyushu University, Fukuoka, Japan, (7) Ibaraki University, Mito, Japan (8) NiCT, Tokyo, Japan (kitazawa@planeta.sci.isas.jaxa.jp / Fax +81-3-6204-8799 / Phone +81-90-5798-5472

World space agencies in advanced countries have Meteoroid and Space Debris Environment models to estimate meteoroid and debris flux as a function of the size, relative impact velocity, and impact angle. Comparison among the major three debris models, NASA-ORDEM2000, ESA-MASTER2001, and MASTER2005, revealed that the distribution of small debris in LEO differs among those models. Particularly, the size range of a hundred micrometers to several millimeters differs among them. The results indicate the necessity of more intensive research on small debris. JAXA has been developing an International Standard an International Standard entitled “Process-based implementation of debris environment model” under ISO community. And, JAXA has begun a basic study to develop in-situ measurement devices to detect small debris ranging from a hundred micrometers to several millimeters. Additionally, JAXA had performed passive dust collector experiments on the International Space Station. Although the analyses of dust collectors are not completed yet, the analysis results will supply important material information about micro debris.