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SERIES

北京大学工学院

力学与工程科学系

湍流与复杂系统国家重点实验室

Energy transfer measurements free from restrictive assumptions

报告人: 杨艳

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时 间: 6月26日 周四 10:00

地 点: 新奥工学大楼 3048 会议室

主持人: 赵耀民 助理教授

内容简介:

The idea of energy cascade process at the inertial range is often invoked in turbulent space plasmas to estimate energy dissipation rate. Laws governing the behavior of third-order structure functions in the inertial range, often called third-order laws, are among the few rigorous results about cross-scale energy transfer. Elementary questions persist regarding (i) finite Reynolds number effect on the existence of a well-defined inertial range, over which energy cascade occurs, (ii) upon the establishment of a well-defined inertial range, how energy is cascade when the turbulent configurations deviate from the idealized situation of homogeneous, isotropic, incompressible turbulence, e.g., in the presence of anisotropy, and (iii) upon generalizing the energy cascade process, how such anisotropic energy cascade can be implemented in multi-spacecraft measurements. These issues have not been fully addressed. As the community is increasingly progressing towards multi-spacecraft constellations, e.g., MMS and HelioSwarm, we revisit these crucial issues pertinent to the energy transfer. How to quantify the energy transfer from inertial range and the energy dissipation at kinetic scales will be discussed.

报告人简介:

杨艳, 美国特拉华大学 (University of Delaware) 物理天文系助理教授。2012 年本科毕业于北京大学工学院, 2018 年博士毕业于北京大学工学院, 获流体力学博士学位, 2018-2021 年在南方科技大学力学与航空航天工程系从事博士后工作, 之后进入特拉华大学工作。主要研究磁流体湍流、太阳风及空间等离子体湍流, 等离子体湍流的能量传输和耗散。其博士论文获 2018 年北京大学优秀博士学位论文奖, 并在 Springer 出版, 发表相关论文 50 余篇。《Physical Review Letters》, 《Astrophysical Journal》和《New Journal of Physics》, 《Nature Astronomy》等期刊的审稿人。

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