

Title: *Nonlinearity in Two-dimensional Turbulence: Scale-to-scale Transfer*

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Abstract

Many geophysical fluid systems in both atmosphere and ocean are highly turbulent, and among them many can be treated as two-dimensional due to their very high aspect ratios.

In this conference, we will present our work based on a quasi two-dimensional turbulent experiment. Our study is focused on the effect of nonlinearity in transports of quantities (such as energy and rotation rate) among different spatial scales. We find that a relationship exists between certain direction of scale-to-scale transfer and certain property of triad interactions presented in the flow.

This finding can shed lights on our understanding towards how nonlinearity influence multi-scale interactions, and provide new potential approaches in studying real fluid systems on earth with highly turbulent nature.