Abstract
In this colloquium, I will discuss how wave turbulence in geophysical fluids and magnetized plasmas naturally generates flows. These jets are zonal flows, familiar from the jet stream. Zonal flows are also critical to tokamak confinement and thus are of relevance to ITER. The feedback loops controlling wave–zonal flow turbulence will be elucidated. Finally, we introduce the fascinating topic of staircase patterns, which resolve the natural question of scale selection for zonal flows. Staircases are quasi–periodic zonal shear layers aligned with profile corrugations.

About the speaker
Patrick H. Diamond is Distinguished Professor of Physics at UC San Diego. He earned a Ph.D. at MIT and was a postdoc at the Institute for Advanced Study. Diamond was awarded the Alfven Prize (EPS), the Nuclear Fusion Journal Award (IAEA) and is a Fellow of the APS. He has advised students on 33 completed Ph.D. theses. Recently, he served as lead coordinator of the Kavli Institute for Theoretical Physics Program “Staircase 21.”

All are cordially invited!