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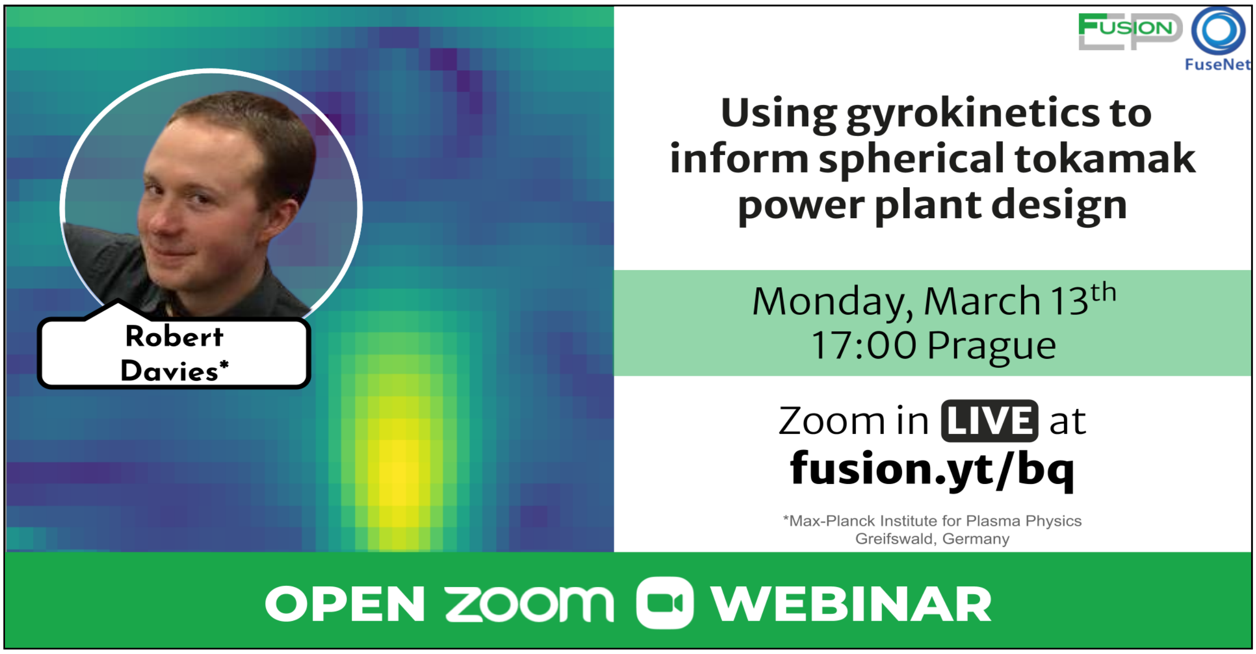

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Title: Using gyrokinetics to inform spherical tokamak power plant design

Speaker: Robert Davies

When: 2022-03-13 17:00:00

Abstract: Now is an exciting time for magnetic confinement fusion, with a great deal of private and public interest in a variety of reactor concepts. However, a major consideration for the design and operation of commercially viable fusion power plants is plasma turbulence, which constrains the energy confinement, density and temperature in the plasma. In this talk, I describe how plasma turbulence (and the spatially small instabilities which drive it, called "microinstabilities") can be simulated using gyrokinetic codes. These simulations can be used to understand and predict experimental results, but also to assess the viability of hypothetical fusion plasmas. In this way, gyrokinetics can be used to influence reactor design. As a specific example of this, I describe how a particular microinstability (the "kinetic ballooning mode") provides a constraint on the plasma shape for commercially viable spherical tokamak (ST) power plants.

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