Abstract Submitted
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Electrical Probe Measurement NICHOLAS BRAITHWAITE, The Open University — There are several ways to set up an electrical diagnostic-interaction with a volume of ionized gas. In one of the simpler scenarios a bare wire is inserted into a plasma and biased with respect to a convenient reference; the current-voltage characteristic of this 'probe ' contains information on the electrical composition of the plasma. More generally, the electrical components of a plasma can be stimulated by DC, AC, RF/microwave electrical sources, that may in turn drive currents, provoke resonances or launch waves. The responses can be interpreted in terms of quantities such as the number densities of charged particles, the mean energies or the energy/speed distributions of charged particles and the degree of collisionality. The general 'popular ' view of electrical diagnostics is that they are simple to implement but the techniques are inherently invasive and the analysis/interpretation of data is contentious. This presentation will examine the challenges of using electrical probes in a range of realistic, low-temperature plasma environments, paying due attention to achieving conditions which satisfy the assumptions that are needed to extract meaningful data from the analysis.

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