Topology and Phase Induced Complexity in Plasmas

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There are many origins of complexity in plasmas, one source being being interfaces with which plasmas interact or pass through. Often this complexity is a consequence of geometry, such as the shape and scale length of the surface, or the orientation of the surface to the applied electric field. In other cases, topology is a factor – does the plasma surround the surface (such as particles in plasmas) or does the surface surround the plasma (such as plasma propagating through tubes). When plasmas interact with these interfaces, phase is an important considerations. Solid phases typically limit plasmas while liquid phases can transform the reactivity plasmas, producing a new type of complexity. In this talk examples of geometrically, topologically and phase induced complexity in low temperature plasmas will be discussed. Examples will be drawn from atmospheric and low pressure plasmas interacting with non-ideal surfaces in the form of ordered and unordered arrays, and with liquids.

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