

Abstract Submitted
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Onset of Coherent Electromagnetic Structures In the REB-DT Fuel Interaction for Fast Ignition CLAUDE DEUTSCH, LPGP UParis XI, ANTOINE BRET, ETSII Ciudad-Real, MARIE-CHRISTINE FIRPO, LPTP Polytechnique, DEUTSCH COLLABORATION — We stress the combinations of swiftly growing electromagnetic instabilities(EMI) arising in the interaction of relativistic electron beams(REB) with precompressed DT fuels of fast ignition interest for ICF.REB-target system is taken neutral in charge and current with electron distribution functions including beam and target temperatures.We also pay attention to the impact of modes growth rates(GR) of mode-mode coupling and intrabeam scattering. Collisional damping is documented at large wave numbers in terms of skin depth.A quasi-linear approach yields GR below linear ones.One of the most conspicuous output of this combined linear analysis are 3D ridges featuring the largest GR above k - space for an oblique modes propagagtion w.r.t initial beam velocity. Those modes are seen immune to any temperature induced damping. These novel patterns arise from combining Weibel,filamentation and 2-stream instabilities.They persist in the presence of smooth density gradients or strongly applied magnetic fields. In the very early propagation stage,with no current neutralization,and with strong edge density gradients,REB show a typical ringlike and regularly spiked pattern in agreement with recent experimantal and simulation results.

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