



POLITECNICO
MILANO 1863

**DIPARTIMENTO DI
SCIENZE E TECNOLOGIE
AEROSPAZIALI**

Seminar

Shocks, turbulence and interactions in non-ideal and dense gases

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Imperial College

Dense gases are characterised by molecules featuring large numbers of active degrees of freedom (quantified by the C_v/R ratio). The isentropes in such gases have the distinct property of following rather closely the isotherms (the two become identical in the limit of C_v/R going to infinity). Near the liquid-vapour critical point, this makes the isentropes very shallow and possibly concave (in the pressure-specific volume diagram). Whilst shallow isentropes are desirable when designing expanders (i.e. a large specific-volume increase may be achieved for virtually no pressure drop), could such extreme compressibility effects modify turbulence in a profound manner? This talk will discuss two particularly interesting aspects: (i) shock-refraction properties (i.e. the way a shock can redistribute the energy of incoming perturbations), (ii) the energy transfers in homogeneous turbulence (i.e. particularly the work done by the unsteady pressure force). In both cases we will show that non-convex isentropes are extremely influential in letting both the shock and the turbulence redistribute any supply of turbulence kinetic energy in ways which are simply not observable in ideal gases.

March, the 17th, 2016 at 14:30
Sala Consiglio, 2nd Floor,
Building B12, Campus Bovisa

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