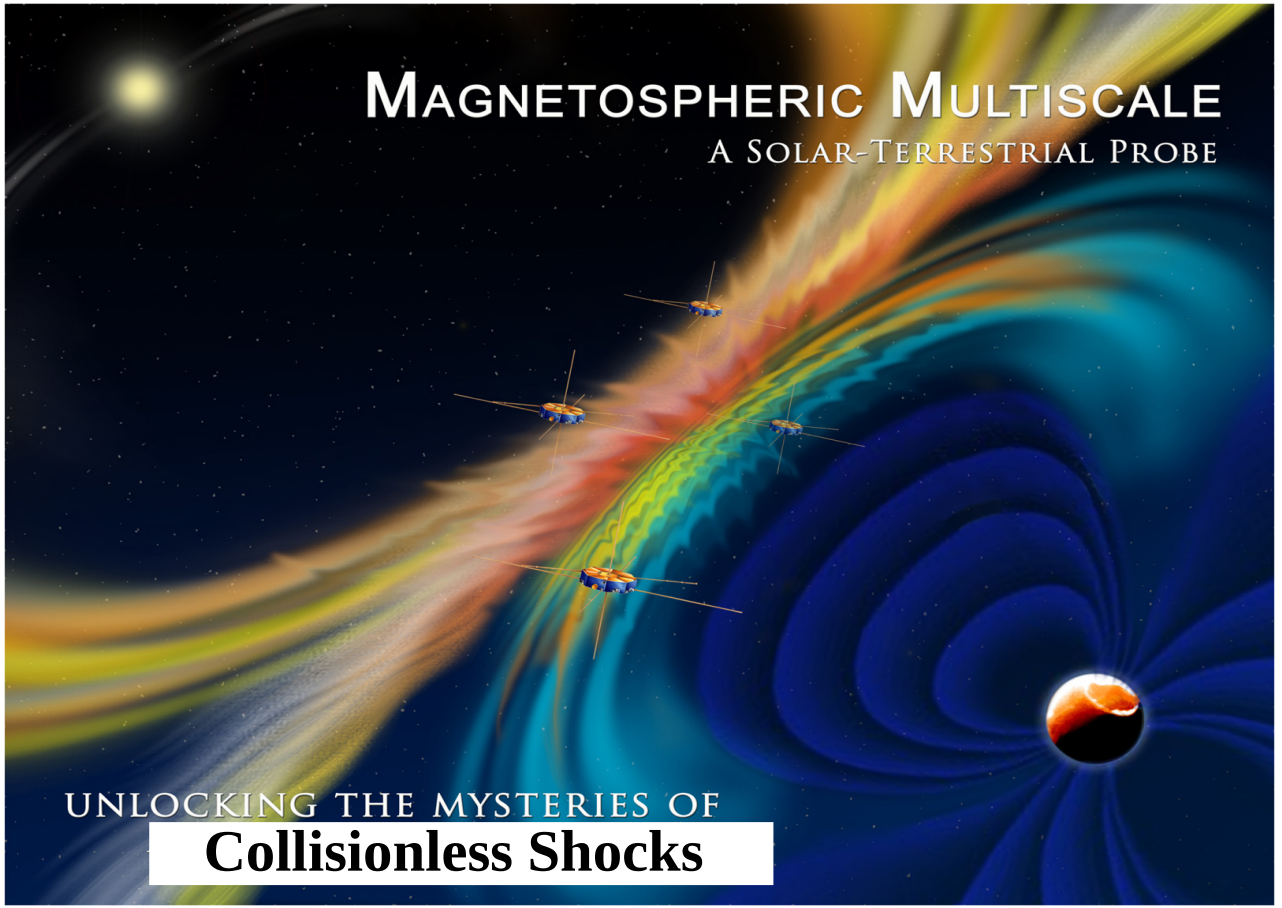
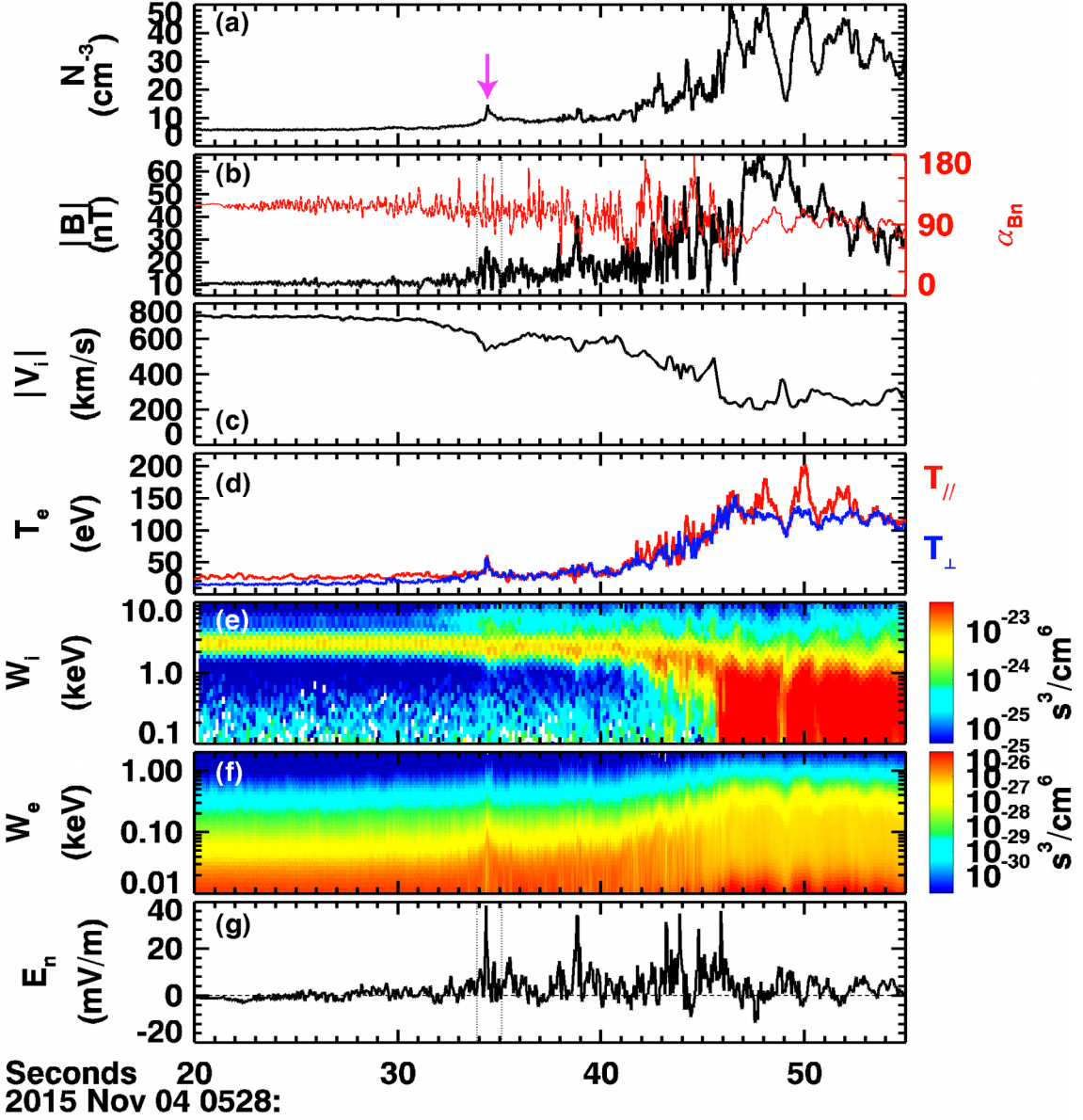
FPI: Continuous monitoring of 3D e & i VDFs through the shock layer





A quasi-perpendicular supercritical shock

$M_A \sim 7.8$

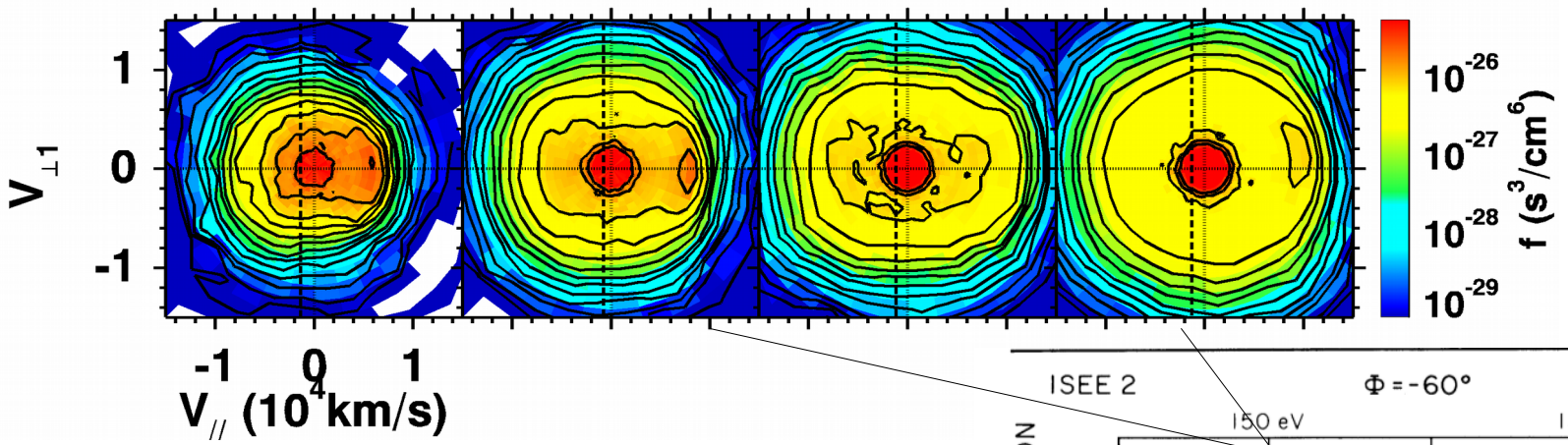
$\beta_i \sim 1.1$

$\beta_e \sim 0.3$

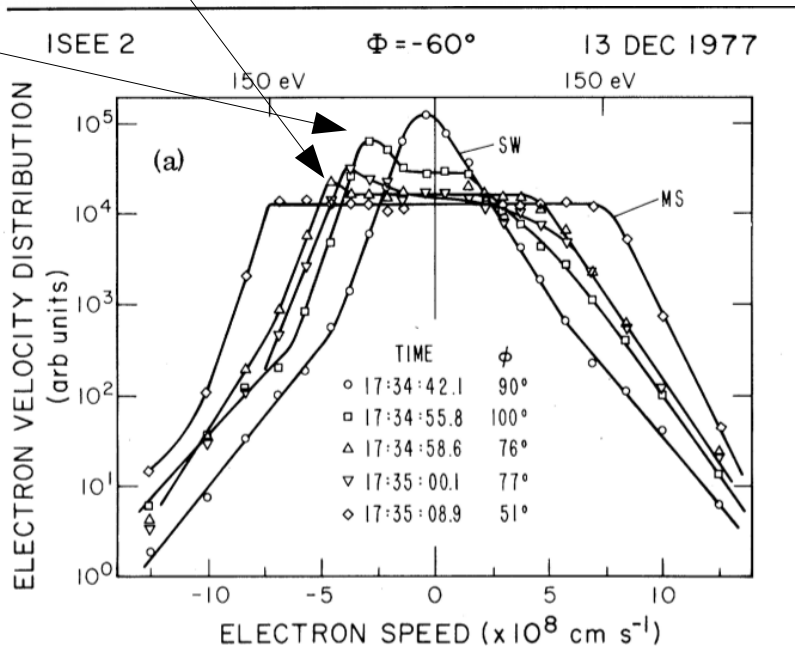
$\theta_{Bn} \sim 115\ (65)$

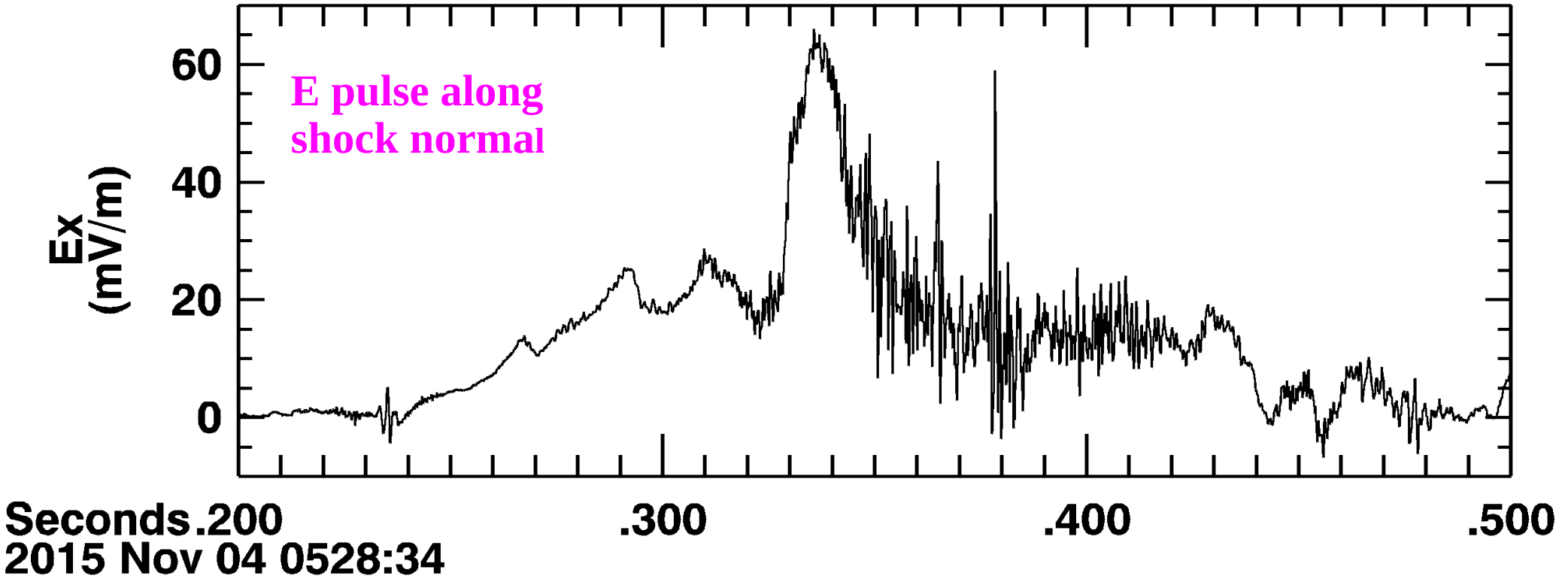
3D eDFs from the main Te ramp confirming the earlier ISEE2 picture

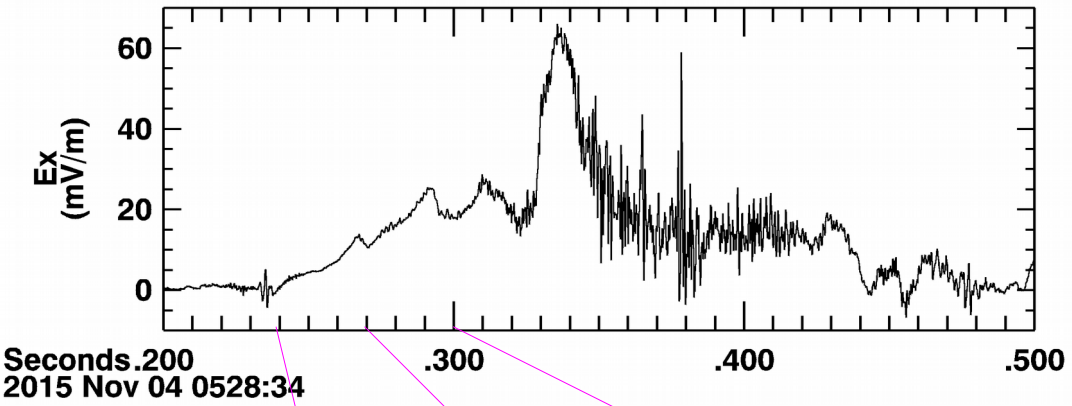
& show the heating process!

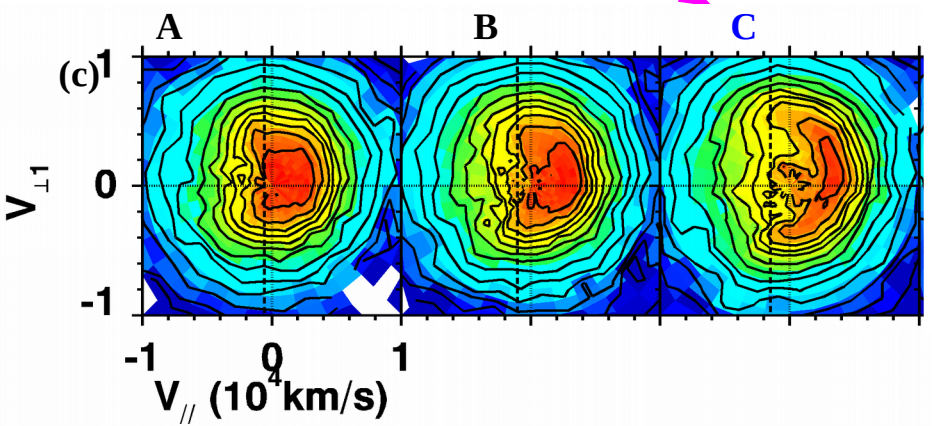


[Feldman et al., 1982]



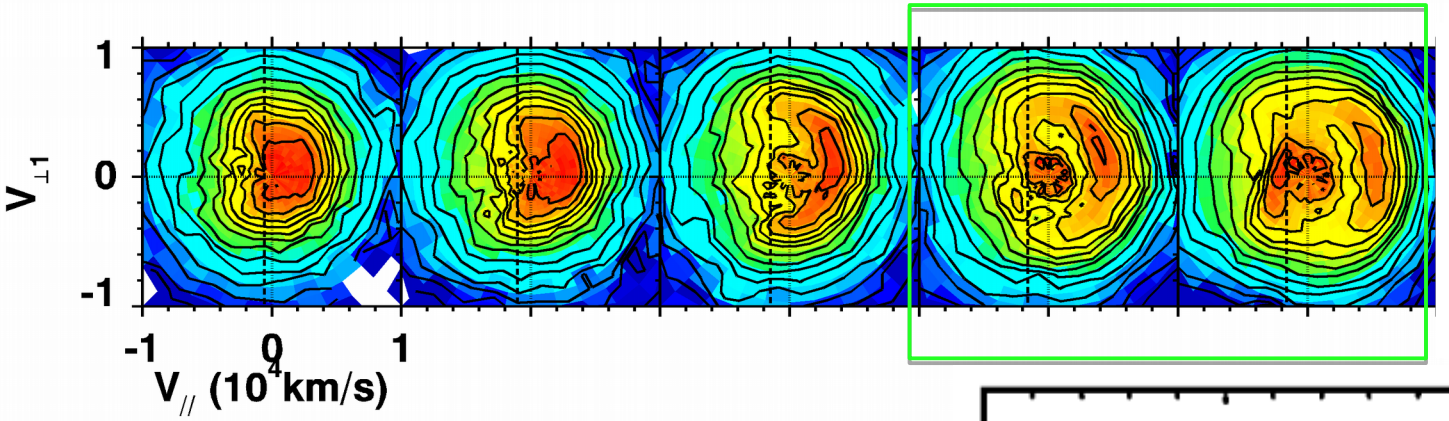

E pulse along
shock normal
Ex
(mV/m)
60
40
20
0
Seconds .200
.300
.400
.500
2015 Nov 04 0528:34



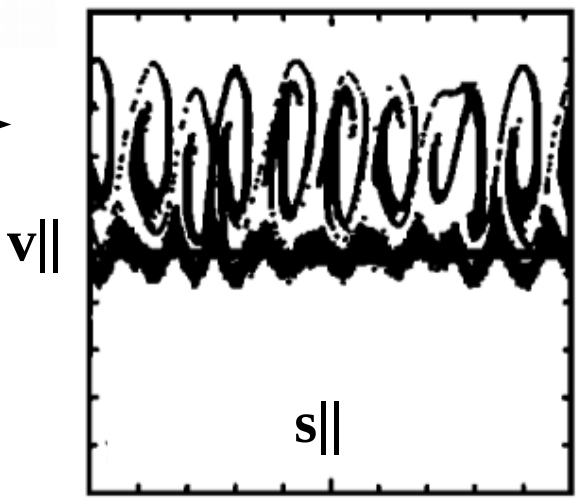


Electron acceleration

Nonlinear relaxation: transport of phase-space-density from parallel to anti-parallel

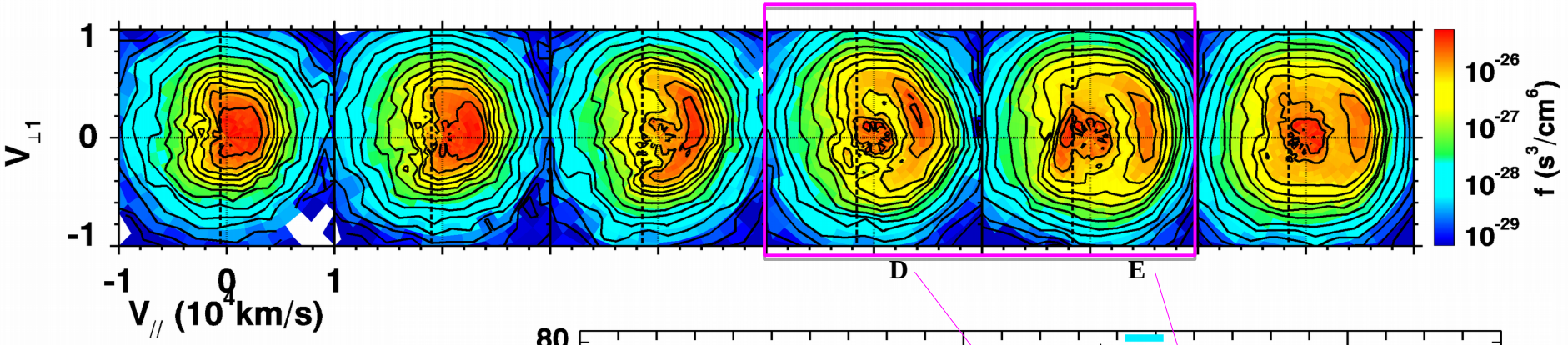


Electron trapping? →



[Omura et al., 1996]

E|| fluctuations begin to grow as transport of phase-space-density to anti-parallel starts



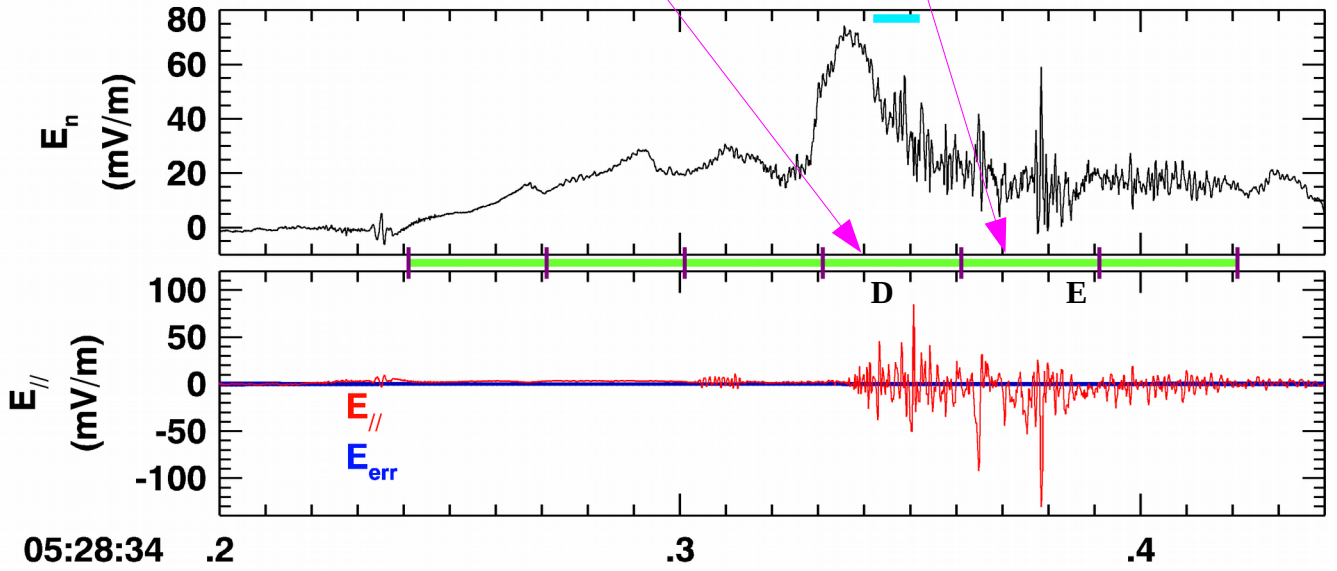
Buneman

→

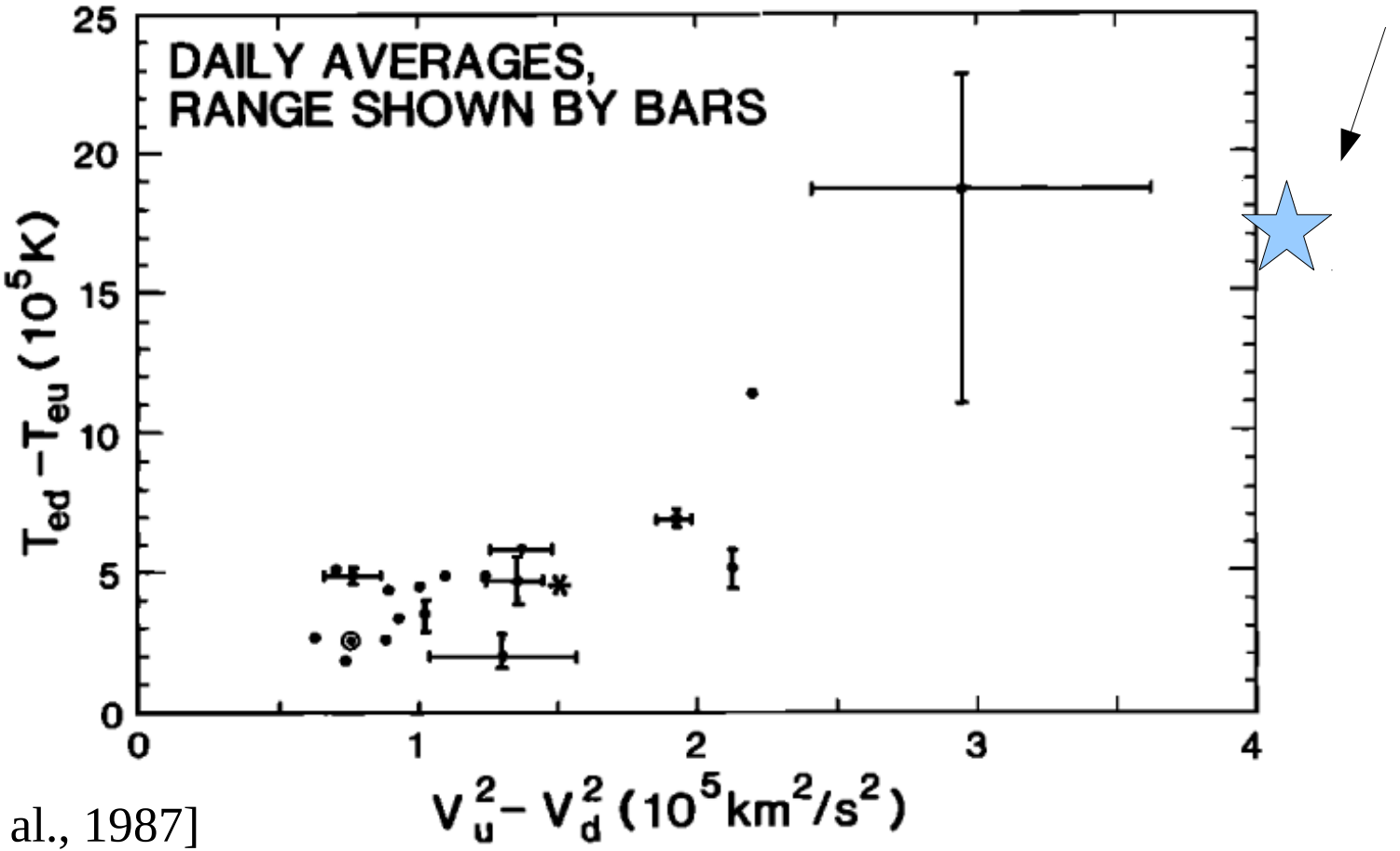
ECDI

→

3D IAWs in B?



This MMS shock



[Thomsen et al., 1987]