

Abstract Submitted  
for the DPP08 Meeting of  
The American Physical Society

Sorting Category: 11.0.0 (T)

**Velocity Filtration (VF), Coronae and Winds** JACK SCUDDER, University of Iowa — The approach of VF for coronal winds is *not* built on a presumption of an equation of state for the underlying coronal plasma; all moments are retained as VF addresses the classes of velocity space access of assumed non-thermal boundary distributions in the coherent forces of gravity, magnetic field, and electric field. The principal virtues of velocity filtration are: 1) Coronal inversion of to millions of degrees above 5000K chromosphere of scale height 180km - *without ad hoc* wave damping or momentum addition; 2) Heating of coronal loops organized by altitude; temperature and density anti-correlated; 3) Sustained increase of temperature with height beyond the sonic point required to produce fast winds; 4) Recovers Parker's (1958) range of slopes of temperature profiles at the sonic point that make supersonic wind possible; 5) Predicts asymptotic wind speeds in terms of the suprathemal tail index at the inner boundary condition; 6) Parallel electric field at Parker's critical point is essentially the Dreicer limit, undercutting a Chapman-Enskog closure; 7) Minor ions are heated proportional to charge to mass ratio; 8) All stars with bound atmospheres on the ZAMS should have coronae and winds, thus accounting for their common occurrence; 9) Inhomogeneity, gravity and speed dependence of collisions are the essential seeds of VF, coronae and Parker winds; 10) VF is  $\mathbf{f}=\mathbf{m}\mathbf{a}$  in the form of  $d\mathbf{f}/dt=0$  with collisions as a correction.

Prefer Oral Session  
 Prefer Poster Session

Jack Scudder  
jack-scudder@uiowa.edu  
University of Iowa

Date submitted: 21 Jul 2008

Electronic form version 1.4