Modeling Observable Signatures of Nanoflare Heating Frequency in Active Region Cores

Will T. Barnes & Stephen J. Bradshaw
Department of Physics and Astronomy
Rice University

Introduction

- Nanoflare model of Parker [1]: corona heated by impulsive ($\ll \tau_{cool}$), low-energy (10^{24} erg) events produced by twisting, braiding of field lines rooted in the photosphere
- Fundamental question: what is the frequency of energy release in the solar corona? Two extreme cases:
  - Low-frequency heating: Time between successive events is much greater than typical loop cooling time (i.e. approaches single nanoflare case)
  - High-frequency heating: Time between successive events is much smaller than typical loop cooling time (i.e. approaches steady heating case)
- **Goal:** Use hydrodynamic loop models to better understand how different heating properties

Forward Modeling

- Foo
- Bar

Heating Model

- Foo
- Bar

Spectroscopic Details

- Foo
- Bar

Emission Measure Diagnostics

- Foo
- Bar

Emission Measure Distributions

- Foo
- Bar

Emission Measure Slopes

- Foo
- Bar

Slope Distributions

Conclusions

- Some
- conclusions
- here

References

[1] Parker, E. N. 1988, The Astrophysical Journal, 330, 474

wtbarnes
Mail: will.t.barnes@rice.edu