

Abstract Submitted  
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**Observational Analysis of Solar Coronal Plasma Clouds and Theory for Their Persistence**<sup>1</sup> M. ASGARI-TARGHI, CfA-Harvard-Smithsonian, B. BASU, B. COPPI, MIT, M. HAHN, D. SAVIN, Columbia University, L. GOLUB, CfA-Harvard-Smithsonian — The inner solar corona, when observed in X-ray emission, consists of loops and unstructured clouds. The emission from the clouds corresponds to temperatures about 2 - 3 MK. These “hot clouds” are variable, but persist for many days. An observational analysis is presented involving magnetic field, density, and temperature measurements. Using these observations, a theoretical model is proposed where the macroscopic stability of the clouds is provided by the ambient magnetic field. In this model, at the more “microscopic” level, the plasmas associated with the clouds are considered as dominated by transport processes including particle inflow processes [1,2] that counteract relevant outward diffusion processes and can explain the lifetime of these clouds.

[1] B. Coppi and C. Spight, Phys. Rev. Lett. 41, 551 (1978).

[2] B. Coppi, MIT (LNS) Report HEP 13/07, Cambridge, MA, 2013.

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Bruno Coppi  
Massachusetts Institute of Technology

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