

Abstract Submitted
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Effects of different strapping field profiles on plasma loop expansion¹ BAO NGUYEN QUOC HA, PAUL BELLAN, California Institute of Technology — The hoop force causes arched, current-carrying plasma loops to expand unless additional forces are applied. This expansion was slowed and even inhibited by a magnetic field of proper polarity in previous solar coronal loop experiments [1] but there was no attempt to characterize the strapping field's spatial profile. We have reproduced the Hansen results by mounting the coils producing the strapping field on two ports of the vacuum chamber. We plan to enhance the setup by mounting coils on 3 axis adjustable stands that provide precision placement of the coil relative to the plasma. This precise placement allows us to adjust the altitude decay profile of the strapping field which is predicted to determine the slow rise to fast eruption behavior of plasma loops on the sun [2]. Preliminary data on the interaction between the plasma and specified strapping field profiles will be presented. We have also developed 3-axis Hall sensors capable of generating vector maps of the strapping field.

[1] J. F. Hansen and P. M. Bellan, *Astrophys. J. Lett.* **563**, L183 (2001)

[2] B. Kliem and T. Torok, *Phys. Rev. Lett.* **96**, 255002 (2006)

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