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**Simulation of Flux Ropes in Astrophysical Jets, Solar Corona and Laboratory** GIOVANNI LAPENTA, D. KNOLL, LANL, I. FURNO, EPFL-CRPP, T. INTRATOR, P. KRONBERG, LANL — We report on our simulation effort based on understanding the behaviour of flux ropes of interest to astrophysical and laboratory plasmas. We address three fundamental issues. First, what model of flux ropes is most appropriate in specific conditions? We focus here on the astrophysical jets created in active galactic nuclei and discuss models that can represent observed features [1]. Second, what leads to the formation of flux ropes? We consider specifically the creation of flux ropes in solar coronal processes involving the presence of bulk flows leading to localized compression and reconnection [2]. Third, how do flux ropes evolve? We focus here on comparing our simulations with observed solar coronal processes (namely the formation of blobs at the cusp of helmet streamers and their ejection into the solar wind) and with laboratory experiments conducted on RSX [3].

[1] G. Lapenta, P.P. Kronberg, *ApJ*, 625, 37, 2005.

[2] G. Lapenta, D.A. Knoll, *Solar Phys.*, 214, 107, 2003; *ApJ*, 624, 1049, 2005.

[3] I. Furno, et al., *Phys. Plasmas*, 12, 055702, 2005.

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