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On the thermal and magnetic properties of an active region anemone jet

Abstract: Recurrent jets are regarded as one of the crucial processes for the periodic release of magnetic free energy through intermittent magnetic reconnections. In this talk, we will present a detailed analysis of the dynamic, thermal, and magnetic characteristics and evolution of a typical anemone jet amid a series of recurrent eruptions at the edge of the active region 13102. This jet demonstrates a multi-thermal nature, encompassing plasma with temperatures ranging from the chromosphere to the transition region and the corona. NLFFF extrapolations reveal a highly twisted flux rope (with a twist number of ~ 2.06) featuring a bald patch structure at the jet's footpoint, which facilitates magnetic reconnections. This indicates that even small-scale reconnections associated with coronal jets might be linked to highly complex magnetic configurations. Moreover, this jet has also been found to have a close relationship with local magnetic cancellation in a local quadrupolar region, which has seldom been reported in the literature.

Keywords : solar jets, magnetic reconnection ; solar magnetic fields ; solar activity

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