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Hot coronal jets and cool surges

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Although studied for a few decades now, the collimated plasma ejections detected in the EUV and X-Ray spectral ranges still contain many unsolved puzzles concerning the underlying coronal structures and the basic physical processes at work in them. The initial 2D numerical models of the 1990s provided basic physical insight in spite of the low spatial resolution and unrealistic values for the coronal parameters. In the meantime, both observations and theory have progressed considerably: observationally, the latest space missions provide simultaneous high-resolution coronal, photospheric and chromospheric data; for the theoretical work, highly efficient numerical codes with massive parallelization are available that can cope with processes from the top of the convection zone to the corona, in some cases including modules for a realistic equation of state, radiation transfer and heat conduction. This presentation aims at summarizing some recent progress in the understanding of the physics of the ejection phenomena, both of the hot, colimated coronal jets and of the associated cool surges.

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