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Magnetic Reconnection at a Three-dimensional Solar Null Point

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Using a specific solar null point reconnection case studied by Masson et al (2009; ApJ 700, 559) we investigate the dependence of the reconnection rate on boundary driving speed, numerical resolution, type of resistivity (constant or numerical), and assumed stratification (constant density or solar-like). The MHD simulations start out from a potential magnetic field containing a null-point, obtained from a SOHO magnetogram extrapolation approximately 8 hours before a C-class flare was observed. The magnetic field is stressed with a boundary motion pattern similar to the horizontal motions observed by SOHO during the period preceding the flare. The general behavior is nearly independent of driving speed and numerical resolution, and is also very similar in stratified and unstratified models, provided only that the boundary motions are slow enough.