Petschek-like reconnection in the transition region of a hyperbolic tangent resistivity profile SHAN-CHANG LIN, YI-HSIN LIU, Dartmouth College, LIU TEAM — Two-dimensional magnetohydrodynamics (MHD) simulations show that Petschek reconnection is unstable using a uniform resistivity. In this work, we show that a steady-state Petschek-like reconnection develops in the transition region of a hyperbolic tangent resistivity profile. Our study suggests that the gradient of resistivity along the outflow direction is crucial in making Petschek-like reconnection accessible. Such a resistivity gradient may happen in the lower solar atmosphere where the plasma is highly stratified.

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