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# MMS observations of electron demagnetization in velocity space during magnetotail reconnection

Binbin Tang<sup>\*1</sup>, Wenlong Guo<sup>1</sup>, Wenya Li<sup>1</sup>, Daniel Graham<sup>2</sup>, and Yuri Khotyaintsev<sup>2</sup>

<sup>1</sup>National Space Science Center, CAS – China

<sup>2</sup>Swedish Institute of Space Physics – Sweden

## Abstract

Understanding the electron demagnetization is key for magnetic reconnection. Usually, this process is analyzed through the generalized Ohm's law or the electron momentum equation, showing the importance of the electron off-diagonal pressure term in breaking the frozen-in condition in the reconnection region. Since these two equations are derived from the Vlasov equation by an appropriate integration in velocity space, we can use high-resolution MMS data to directly investigate the electron demagnetization process in velocity space. Our results show that the agyrotropic meandering electrons, as expected, contribute to the off-diagonal pressure term in the central reconnection current sheet, and the inflow electrons, which undergo a gradual demagnetization and deceleration process, play a significant role at the edge of the reconnection current sheet.

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\*Speaker