



MESSENGER observations of flux ropes and reconnection fronts: locations of the near tail reconnection site at Mercury

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Reconnection related magnetic structures, i.e. flux ropes and reconnection fronts, has been investigated in Near Mercury Neutral Line region (- 2 RM and -3 RM). The structures show a clear dawn-dusk asymmetry with higher occurrence frequency on the dawn side than the dusk side. This suggests that magnetic reconnection in Mercury's magnetotail happens more frequently on the dawn side than dusk side plasma sheet. This is opposite to the observations in Earth's magnetotail showing magnetic reconnection more frequently occurs on the dusk side than the dawn side plasma sheet. We have also discussed its influence in Mercury's magnetotail dynamics. And a recent study on the supra-thermal proton distribution further supported the conclusion that reconnection site is more frequently occurs on the dawn side than dusk side in Mercury's magnetotail.