



## **Plasma density estimates from spacecraft potential using MMS observations in the dayside magnetosphere**

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Using our established methods (Torkar et al. 2015; Andriopoulou et al. 2015) to reconstruct spacecraft potential observations that are under active control to uncontrolled ones, we consider MMS observations in the dayside magnetosphere from spacecraft with or without active spacecraft potential control (ASPOC on/off) and estimate the photoelectron emission as well as the plasma density from spacecraft potential variations. These plasma density datasets are available upon request and are subject to the time resolution of spacecraft potential observations. Such estimates are of particular importance especially during periods when the plasma instruments onboard MMS are not in operation. We compare our results with the plasma density observations provided by plasma detectors onboard MMS, whenever available. We finally discuss about the differences among different spacecraft.