



## **Statistical characteristics of magnetosheath jets: MMS observations compared to global hybrid-Vlasov simulations**

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Magnetosheath jets are high dynamic pressure structures extending from the bow shock towards the magnetopause, where they can cause different effects. They have been suggested to originate either by shock rippling or by interactions of short large-amplitude magnetic structures (SLAMS) interaction with the bow shock. Recent modelling efforts, limited to a single set of upstream conditions, have provided the first size and shape distributions of the jets that are in quantitative agreement with previous spacecraft observations. This newly established methodology makes it possible to identify several jets from different simulation runs. Here we use the Vlasiator global hybrid-Vlasov simulation to identify several jets from different runs having a variety of upstream conditions. We also identify jets from MMS spacecraft data, and gather a database of more than a thousand simulated individual jets with an identity and a lifetime and more than a thousand observed jets. We investigate the jet dimensions and physical parameters as a function of driving conditions, location and as a function of a lifetime of the jet, and compare the simulation results with observations where applicable. We find that the jets in the simulation are in good agreement with the observations, confirming earlier findings from Vlasiator. As a separate note, we also find that many jets are closely associated with SLAMS penetrating the bow shock.