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Anomalous magnetosheath dynamics: magnetosheath crossings by spacecraft in few minutes and flow balancing by plasma jets

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Multipoint spacecraft measurements in the magnetosheath by Cluster, Double Star, THEMIS and Interball demonstrate that the spacecraft could cross the magnetosheath in few minutes, while usually it takes hours.
We discuss this anomalous magnetosheath dynamics in view of both of solar wind and intrinsic magnetosheath features, including the magnetosheath plasma flow stratification.
The stratified magnetosheath flows can carry a substantial part of the total magnetosheath flux, being an alternative to the uniform magnetosheath state.
On the basis of data presented, we display an evidence for the superdiffusion regime in the region close to the magnetopause, which surprisingly co-exists with the evident separation of the moving plasmas by a turbulent transport barrier.
We present the transport barrier properties and value in the context of the common physics aspects including fusion devices and future multi-point missions.