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## Studying cold plasma flows with electric field instruments

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Cold tenuous plasmas are difficult to study with conventional ion instruments onboard magnetospheric spacecraft, as the spacecraft potential often is so high that the ions cannot reach the spacecraft. If the plasma is flowing, a wake is created behind the spacecraft. This wake can give a detectable or even dominating contribution to the data from a conventional double-probe electric field instrument. As the wake depends on the physical properties of the plasma, its signature can be used to derive parameters of the plasma flow. A simple analytical model allows the derivation of the parallel flow speed of the plasma from electric field data, as we illustrate using measurements from the Cluster EFW and EDI instruments. Numerical simulations provide additional insight.