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Scales and variability of the magnetic field transition at quasi-perpendicular shocks

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At sufficiently high Mach numbers, the collisionless quasi-perpendicular shock exhibits non-stationary behaviour in many parameters, such as the fraction of ions reflected and the magnetic field profile. Simulations have revealed a variety of behaviours, such as time and length scales of the variability, as well as dependence on shock parameters such as Mach number. Four spacecraft Cluster data offer the possibility of measuring this variability, and comparing against predictions. By comparing data between spacecraft as they pass through the shock, we present estimates of the spatial and temporal scales of variability of the magnetic field profile. In addition, we attempt to estimate the variability of different regions of the shock, such as the overshoot and ramp, independently.