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Self-similarity of ICME flux ropes in the inner heliosphere

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Interplanetary coronal mass ejections (ICMEs) are a significant feature of the heliosphere and the primary cause of space weather at the Earth. We have analysed the magnetic field structures of 18 ICME flux ropes observed by radially aligned spacecraft in the inner heliosphere. Similarity in the normalised flux rope structures is determined through the application of a simple technique that maps the magnetic field profile from one spacecraft to the other. This technique reveals similarities that are not readily apparent in the unmapped data and is a useful tool for determining whether magnetic field time series observed at different spacecraft are associated with the same ICME. Lundquist fitting has been applied to the flux ropes and the rope orientations have been determined. Macroscale differences in the profiles at the aligned spacecraft are consistent with differences in flux rope orientation.