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Interactive comment

Interactive comment on "A new method to identify flux ropes in space plasmas" *by* Shiyong Huang et al.

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1. The specific method seems simple but rather non-convincing since it will probably work for one specific type of flux rope model which is used to determine the Test Function to be Correlated (TFC). There are studies in the literature, where flux rope signatures were identified in CME structures with a lot more input models.

2. The specific method does not consider plasma data for the flux rope identification. When analysing Cluster observations, due to the highly inclined orbit of the spacecraft and the flapping motion of the magnetotail, it is possible to get magnetic field signatures that are similar to those predicted by the model but in reality are not related to a flux rope.

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3. The paper does not mention which correlation coefficient is considered. If the Pearson correlation coefficient is calculated, then the study detects the times when there is a linear relation between the data and the TFC such as: data=A*TFC+B (where A and B constants). It is not clear in the paper that this relation is expected. If the purpose is to identify E-R flux ropes features in the data, then why not fitting the specific functions instead of correlating them? It is important to note that maximizing the correlation coefficient is not a fitting method but investigation of the linear relation between the data and the TFC.

4. How does the path of the spacecraft affect the results? Is the TFC constructed considering only one path of the spacecraft through the flux rope? Then, it is not clear how the results will not be biased due to that. For example, if different path is considered for the same flux rope, what will the method derive and how the correlation coefficients will be affected.

5. As shown in the paper (Figure 3), the TFC is a "part" of the ideal model shown in Figure 2. More specifically, TFC does not include the "edges" where the B field drops to zero. Under which criteria the specific part of the ideal model is selected. How this selection affects the determined scales?

6. The method correlates the signatures of two components and the total magnitude. Does it matter which two of the three components you use?

7. As mentioned in the paper, the correlation coefficient could be very large at small scales. Does the study consider the statistical significance of those coefficients? It is also mentioned that the method will be improved in order to be applied to data-sets in the turbulent magnetosheath. Is there a specific plan for the future?

Minor point: It probably worth adding references to previous studies that have used maximizing the correlation coefficient methods.

The above comments came from a broader discussion within the UCL/MSSL plasma group.

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