Global configurations of interplanetary magnetic flux ropes

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Coronal mass ejections sometimes produce plasma clouds in the solar wind. Such plasma clouds have a peculiar magnetic field structure called a magnetic flux rope. Model fitting to the observed magnetic flux ropes allow to determine their geometry such as sizes and orientations. Some flux rope events exhibit the magnetic field variations that can be fitted well to both a cylinder-model and a torus-model. One important problem is that the global configurations are completely different between the two models. This study shows a method to solve this problem by analyzing the orientation of a discontinuity surface.