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3d geometry of coronal mass ejections

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Coronal mass ejections are the main source of space weather disturbances, thus understanding their evolution is a crussial point for forecasting their impacts at earth. Near the sun, 3 dimentional observations are not available, thus the 3D geometry of CMEs are still under debate. Based on 2D observational parameters we investigate the possible 3D geometry of coronal mass ejections. These parameters are the perpendicular expansion and the radial expansion. Three cone models are annalized and their evolution studied. If the geometry of CMEs is known, and if it is possible to have a similar model for all CMEs, this can be used to correct and interpret the meaning of the plane-of-sky speeds measured by coronagraphs like the Large Angle and Spectroscopic Coronagraph - LASCO, abord the Solar and Heliospheric Observatory - SOHO. This knowledge would improve subtancially the forecasting of CME arrival time at earth models.