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**Alignment of the CMS muon system with tracks** SERGEY SENKIN, JAMES PIVARSKI, ALEXEI SAFONOV, Texas A&M University, KAROLY BANICZ, US-CMS (FermiLab) — As the name suggests, the Compact Muon Solenoid (CMS) features a full tracking spectrometer for identifying and measuring the momenta of muons. Every muon passes through 18-44 layers, providing a highly redundant track capable of validating and improving the momentum measurement from the inner tracker. But like any tracking system, its performance depends on precise knowledge of the positions of the tracking elements relative to one another and relative to the central CMS silicon tracker. We present techniques to align the muon chambers and layers with high-precision using tracks, and demonstrate the accuracy of one such technique using the first LHC beam from September of 2008.

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