

Abstract Submitted
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Evaluation of Non-axisymmetric Position Measurements of the HBT-EP Vacuum Chamber and Equilibrium Coils J.P. LEVESQUE, B.A. DEBONO, M.E. MAUEL, D.A. MAURER, G.A. NAVRATIL, T.S. PEDERSEN, N. RATH, D. SHIRAKI, Columbia University — The ability to do future multimode and non-rigid external kink studies on the HBT-EP tokamak will largely depend on alignment of the newly installed wall, sensors, and control coils. Also, small non-axisymmetric equilibrium field errors in tokamaks can have a dramatic impact on plasma performance [1], and reducing these field errors can improve plasma behavior. A measurement arm was built on a rotating axis in the center of HBT-EP in order to accurately locate and quantify misalignments of the equilibrium field coils, vacuum chamber, new wall segments, sensors, and control coils. The measurement arm is capable of determining locations of equilibrium coils and vacuum chamber ports to within 0.5 mm. Measurements are being used to correct small misalignments of magnetic coils and chamber components during installation of the new wall and magnetic feedback coils in HBT-EP. A ROMER coordinate measuring machine is used in conjunction with the measurement arm to verify coil alignment and to position the new wall segments in the vacuum vessel. Details of the measurement system and analysis of field errors produced by small misalignments of the equilibrium field coils will be presented. Supported by U.S. DOE Grant DE-FG02-86ER53222.
[1] J.K. Park *et al*, Phys. Rev. Let. 99, 195003 (2007)

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