

Abstract Submitted
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Understanding distortions in the DIII-D tokamak magnetic field trim coils¹ R.T. PAULSEN, U South Dakota, C. PAZ-SOLDAN, E.J. STRAIT, GA — Trim coils were originally incorporated onto the DIII-D tokamak to reduce the error fields that arise from distortions in the preexisting coils that confine the plasma. However, as a result of numerous obstacles crowding DIII-D prior to their installation, the effective geometries of the trim coils were forced to stray from a nominal rectangular shape, causing the trim coils to induce error fields of their own apart from the ones they serve to combat. Since these secondary error fields have the potential to hamper plasma operation, it is imperative to discover to what extent the trim coil geometry is understood. This work seeks to investigate the observed magnetic field measurements for the energized trim coils in the absence of plasma, assess the distortions, and compare these calculations to the same quantities estimated for schematics of the as-built trim coil configurations. Furthermore, measurements taken with plasma with and without trim coils are analyzed by tools for extracting the optimal current for error field correction and compared to the predictions for the as-built system.

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