

Implementation and Operation of Electron Cloud Diagnostics for CEsrTA

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The vacuum system of Cornell Electron Storage Ring (CESR) was successfully reconfigured to support CEsrTA physics programs, including electron cloud (EC) build-up and suppression studies. One of key features of the reconfigured CESR vacuum system is the flexibility for exchange of various vacuum chambers with minimized impact to the accelerator operations. This is achieved by creation of three short gate-valve isolated vacuum sections. Over the last three years, many vacuum chambers with various EC diagnostics (such as RFAs, shielded pickups, etc) were rotated through these short experimental sections. With these instrumented test chambers, EC build-up was studied in many magnetic field types, including dipoles, quadrupoles, wigglers and field-free drifts. EC suppression techniques by coating (TiN, NEG and a-C), surface textures (grooves) and clearing electrode are incorporated in these test chambers to evaluate their effectiveness. We present the implementation and operations of EC diagnostics.

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