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Towards parity nonconservation measurements in francium

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We are developing experiments to study parity nonconservation effects in neutral francium atoms at the ISAC radioactive beam facility at TRIUMF. We are using laser cooling and trapping techniques to prepare the atoms for our measurements and our current effort is based on optical spectroscopy of Stark induced 7s-8s atomic transitions aiming at Standard Model test of the strength of the electron-quark weak neutral coupling. We have observed this transition in several isotopes of francium using an equal frequency two photon excitation scheme. We will discuss our recent progress towards observation of the single photon Stark induced 7s-8s transition; in particular our experiences with generating an electric field with transparent electrodes and building a power build up cavity in vacuum.

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