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Intensity Dependent Effects in the Fermilab Booster. VLADIMIR SHILTSEV, Fermilab — Detrimental beam dynamics effects limit performance of high intensity rapid cycling synchrotrons (RCS) such as the 8 GeV Fermilab Booster. He we report the results of systematic study of the Booster beam intensity losses and emittance growth on key important parameters such as the machine tunes, chromaticities and the total number of protons per pulse (PPP). We also cross-check two methods of the beam emittance measurements – the multi-wires proportional chambers and the ionization profile monitors – and discuss the ultimate performance of the machine now and after foreseen and proposed upgrades.

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