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Models for Examining Impact of Cosmic Rays on Integrated Circuits WILLIAM ATKINSON, The Boeing Company, WILLIAM J ATKINSON COLLABORATION — The Soft Error Rate (SER) produced by SEUs in microelectronic devices in near-earth orbits and in the atmosphere has been computed using a common model developed at Boeing, TSAREME. In space, TSAREME models protons, alphas, and heavy ions with atomic numbers up to 26 (iron) for GCR and peak solar flares. In the atmosphere, TSAREME computes the neutron flux fluxes produced by charged particles interacting with air molecules, accounting for magnetosphere variations with latitude. The devices include Complementary Metal on Oxide (CMOS) and Silicon on Insulator (SOI) transistors with feature sizes varying from a micron to 15 nm. Validation of model results to empirical data discussed.

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