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The Nuts and Bolts Affecting Accelerator Reliability

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The National Superconducting Cyclotron Laboratory (NSCL) at Michigan State University is a United States national user facility for rare isotope research and education in nuclear science, astro-nuclear physics, and accelerator science. The Coupled Cyclotron Facility at NSCL, consisting of two coupled cyclotrons, accelerates stable ion beams to energies of up to 170 MeV/u. Rare isotope beams are produced by projectile fragmentation and separated in-flight in the A1900 fragment separator. A recent lab-wide initiative to improve the electrical connections from power supplies to room-temperature and superconducting magnets called for the replacement of stainless steel bolts with bolts made from materials with better electric conductivity. The presentation will provide insight how using a single inadequate 5-dollar part in the electrical infrastructure system can cause a catastrophic $500,000 damage, forcing the facility into a 2-month shutdown. Lessons learned and preventive programs from the incident will be presented.

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