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Golden Rule of Radiation Hardness: a Study of Strain Effect on Controlled Radiation Damage[1] QING PENG, WEI JI, SUVRANU DE, Rensselaer Polytechnic Institute — Stain is widely presented in microstructures. Strain effect to radiation hardness is critical in understanding and engineering nano-materials. Here we studied the strain effect on the controlled radiation damage in monolayer hexagonal boron nitride (h-BN) through *ab initio* density functional theory calculations. We observed a general behavior of reduction in the radiation hardness by the strain, for both B-vacancy and N-vacancy configurations, in both compressive and tensive strain states, at the directions of zigzag, armchair and bi-axial. We proposed a golden rule of the radiation hardness states that any effort adding energy to the system will reduce the radiation hardness. Such golden rule of radiation hardness could be widely applied to material design and engineering for those devices working in irradiation-enrich environments, for example, electronic and optoelectronic devices in outer space.

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