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Spin relaxation in strained n-type silicon[1] OLEG CHALAEV, YANG SONG, HANAN DERY, University of Rochester — The impurity-induced spin-relaxation mechanism in heavily doped n-type silicon has been recently reported in Phys. Rev. Lett. **113**, 167201. The leading contribution to the spin-relaxation rate occurs due to electron transitions between momentum-space valleys that reside on different crystallographic axes (the so-called f-process). This spin relaxation mechanism can be suppressed by applying uniaxial compressive strain that lifts the valley degeneracy. By calculating the next-order contribution to the spin-relaxation rate due to intravalley scattering and intervalley scattering between opposite valleys (the so-called g-process), we find a significant enhancement of the spin lifetime.

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