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**Dynamic nuclear polarization in silicon** CHANDRASEKHAR RAMANATHAN, Massachusetts Institute of Technology, MAJA CASSIDY, Harvard University, ANATOLY DEMENTYEV, Massachusetts Institute of Technology, CHARLES MARCUS, Harvard University, DAVID CORY, Massachusetts Institute of Technology — We report on our DNP experiments on silicon wafers and nanoparticles. The DNP mechanism in n-doped wafers depends on the doping concentration, and a broad range of DNP enhancements have been observed. The largest enhancements we have recorded (over 200) were for wafers with donor concentrations in the range of $1-3\times10^{17}$ cm$^{-3}$, where the DNP is mediated by exchange-coupled clusters of donors. The silicon polarization obtained was over 10%. We have also characterized the DNP of silicon nanoparticles suspended in a frozen solution. Off-resonant microwave irradiation of paramagnetic electron defects at the silicon-silicon dioxide interface in the nanoparticles results in a hyperpolarization of both the silicon spins of the particle as well as the water protons at the surface of the particle.

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