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Spin-photon entanglement interfaces based on silicon carbide defects SOPHIA ECONOMOU, Dept. of Physics, Virginia Tech, PRATIBHA DEV, Dept. of Physics and Astronomy, Howard University — There is currently a strong interest in silicon carbide defects, as they emit very close to the telecommunication wavelength, making them excellent candidates for long-range quantum communications. In this work we develop explicit protocols for spin-photon entanglement interfaces in several SiC defects: the silicon monovacancy, the silicon divacancy, and the NV center. Distinct approaches are given for (i) single-photon and spin entanglement and (ii) the generation of long strings of entangled photons. The latter are known as graph states and comprise a resource for measurement based quantum information processing.

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