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Helicity and size dependence of skyrmions in $Mn_{1-x}Fe_xGe$ mediated by the Dzyaloshinskii-Moriya interaction JACOB GAYLES, Department of Physics & Astronomy, Texas A&M University, College Station, Texas 77843-4242, USA, FRANK FREIMUTH, GIOVANNA LANI, Peter Grünberg Institut & Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, 52425 Jülich, Germany, REMBERT DUINE, Institute for Theoretical Physics, Utrecht University, Leuvenlaan 4, 3584 CE Utrecht, The Netherlands, JAIRO SINOVA, Department of Physics & Astronomy, Texas A&M University, College Station, Texas 77843-4242, USA, YURIY MOKROUSOV, STEFAN BLÜGEL, Peter Grünberg Institut & Institute for Advanced Simulation, Forschungszentrum Jülich and JARA, 52425 Jülich, Germany — We carry out first-principles electronic structure calculations for bulk alloys of $Mn_{1-x}Fe_xGe$ and MnSi in the B20 compound where skyrmions are seen to vary in size and chiral order. We utilize the Virtual Crystal Approximation to vary the concentration of Fe/Mn atoms within the unit cell. Using a first order perturbation approach with spin-orbit coupling applied to spin-spiral calculations we observe the Dzyaloshinski-Moriya vector changes sign and magnitude with the concentration of the transition metal ion.

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