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Spin transport in rough graphene nanoribbons[1] INANC ADAGIDELI, MICHAEL WIMMER, Universitaet Regensburg, SAVAS BERBER, DAVID TOMANEK, Michigan State University, KLAUS RICHTER, Universitaet Regensburg — We investigate spin conductance in zigzag graphene nanoribbons and propose a spin injection method based only on graphene. Combining density functional theory with tight-binding transport calculations, we find that nanoribbons with asymmetrically shaped edges show a non-zero spin conductance and can be used for spin injection. Furthermore, we show that nanoribbons with rough edges exhibit mesoscopic spin conductance fluctuations with a universal value of $\mathrm{rms}G_s \approx 0.4e/4\pi$.

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