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Casey Lynn Kelleher* (ckelleher@princeton.edu), **Jeffrey D Streets** and **Matthew J Gursky**. *Index-Energy estimates for Yang–Mills connections and Einstein metrics*.

We prove a conformally invariant estimate for the index of Schrodinger operators acting on vector bundles over four manifolds, related to the classical Cwikel-Lieb-Rozenblum estimate. Applied to Yang-Mills connections we obtain a bound for the index in terms of its energy which is conformally invariant and captures a sharp growth rate. Furthermore we derive an index estimate for Einstein metrics in terms of the topology and the Einstein-Hilbert energy. Lastly we derive conformally invariant estimates for the Betti numbers of an oriented four manifold with positive scalar curvature. (Received January 28, 2019)