Cwikel-Lieb-Rozenblum type inequalities for Hardy-Schrödinger operator

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We prove a Cwikel–Lieb–Rozenblum type inequality for the number of negative eigenvalues of the Hardy–Schrödinger operator $-\Delta-(d-2)^2/(4|x|^2)-W(x)$ on $L^2(\mathbb{R}^d)$. The bound is given in terms of a weighted $L^{d/2}-$norm of W which is sharp in both large and small coupling regimes. We also obtain a similar bound for the fractional Laplacian.