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An Index Formula in Terms of the Lifshits–Krein Spectral Shift Function

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Abstract. We compute the Fredholm index of the operator $D_A = d/dt + A(t)$ on $L^2(\mathbb{R}; \mathcal{H})$ via the spectral shift function of the asymptotic operators $A_{\pm} = A(\pm\infty)$ on the separable complex Hilbert space \mathcal{H} in the case when $A(t) = A_- + B(t)$ and $B(t)$ is an appropriate relative trace class perturbation with respect to the unbounded self-adjoint operator $A_- = A(-\infty)$.

This extends recent results by A. Pushnitski and is based on a joint collaboration with Y. Latushkin, K. A. Makarov, F. Sukochev, and Y. Tomilov.