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Quantum equivalent magnetic fields that are not classically equivalent

We construct pairs of topologically distinct Hermitian line bundles over a flat torus for which the associated Laplacians on the line bundles and on all their tensor powers are isospectral. In the context of geometric quantization, we interpret these examples as magnetic fields that are quantum equivalent but not classically equivalent. We also illustrate additional spectral phenomena on line bundles over tori, Riemann surfaces, and other Hermitian locally symmetric spaces. This talk is based on work with various collaborators: Pierre Guerini, Thomas Kappeler, William Kirwin, Dorothee Schueth, and David Webb.