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The Spectra of Entanglement Witnesses

We consider the problem of characterizing the possible spectra (i.e., multisets of eigenvalues) of entanglement witnesses. We completely solve this problem in the two-qubit case and we derive a large family of new necessary conditions on the spectra in arbitrary dimensions. We also establish a natural duality relationship with the set of absolutely separable states, and we completely characterize witnesses (i.e., separating hyperplanes) of that set when one of the local dimensions is 2.