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Rényi Entanglement Entropies and the Entanglement Spectrum FRANCIS SONG, STEPHAN RACHEL, KARYN LE HUR, Yale University — We describe a simple method for computing the full entanglement spectrum of any finite density matrix from the Rényi entropies of integer order. This has important implications for non-interacting fermionic systems where the Rényi entropies are directly related to the cumulants of charge number fluctuations, and for quantum Monte Carlo simulations where it is now becoming possible to compute the Rényi entropies but not the von Neumann entropy or the full entanglement spectrum.

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