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The Role of the Contact in the rf Spectroscopy of a Strongly-interacting Fermi Gas[1] ERIC BRAATEN, DAEKYOUNG KANG, Ohio State University, LUCAS PLATTER, Institute for Nuclear theory — Universal relations that hold for any state provide powerful constraints on systems consisting of fermions with two spin states interacting with a large scattering length. In radio-frequency (rf) spectroscopy, the mean shift in the rf frequency and the large frequency tail of the rf transition rate are proportional to the contact, which measures the density of pairs with small separations. We show that these universal relations can be derived and extended by using the short-time operator product expansion of quantum field theory. This is a general method for identifing aspects of many-body physics that are controlled by few-body physics.

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