The spectrum of quasi-periodic Schrödinger operators in the perturbative regime

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We discuss continuum Schrödinger operators on the line with small quasi-periodic potentials. Through a multi-scale analysis scheme based on the Schur complement formula, we derive a description of the spectrum in terms of the Fourier coefficients of the potential. As a result, we obtain a two-way relation between the size of the Fourier coefficients and the lengths of the gaps of the spectrum, which has an application to global existence for the KdV equation with small quasi-periodic initial data. This is joint work with Michael Goldstein.