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Renormalization of correlations for a generalized Harper equation.

A renormalization analysis is presented for a generalized Harper equation

$$(1 + \alpha \cos(2\pi(\omega(i + 1/2) + \phi)))\psi_{i+1} + (1 + \alpha \cos(2\pi(\omega(i - 1/2) + \phi)))\psi_{i-1}$$

$$+2\lambda \cos(2\pi(i\omega mega + \phi))\psi_i = E\psi_i \,.$$

For ω having periodic continued-fraction expansion, we construct the periodic orbits of the renormalization strange set in function space that governs the correlations in the fluctuations of the solutions of the generalized Harper equation for the strong-coupling limit $\lambda \to \infty$.