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Cyclotomic Criteria for Integer Tilings

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This talk explains the Coven–Meyerowitz criterion for when a finite set of integers tiles $\mathbb{Z}$ by translation, focusing on why condition (T2) is necessary for tiles of arbitrary size. The proof uses the Chinese remainder theorem and lowest-digit slicing to construct a common tiling complement, reducing the period while preserving the cyclotomic data needed for the argument. An example modulo 72 illustrates the reduction. The talk concludes with the implication for the "tiling" to "spectral" direction of Fuglede's conjecture in one dimension.