The Graphs with all but two Eigenvalues equal to ± 1

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Abstract

We determine all graphs whose adjacency matrix has at most two eigenvalues (multi-plicities included) different from 1 and decide which of these graphs are determined bytheir spectrum. This includes the so-called friendship graphs, which consist of a numberof edge-disjoint triangles meeting in one vertex. It turns out that the friendship graphis determined by its spectrum, except when the number of triangles equals sixteen.