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# On the degree sequence of 3-uniform hypergraph

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## Abstract

The study of the degree sequences of  $h$ -uniform hypergraphs, say  $h$ -sequences, was a longstanding open problem in the case of  $h > 2$ , until very recently where its decision version was proved to be NP-complete. Formally, the decision version of this problem is: Given  $\pi = (d_1, d_2, \dots, d_n)$  a non increasing sequence of positive integers, is  $\pi$  the degree sequence of a  $h$ -uniform simple hypergraph? Now, assuming  $P = NP$ , we know that such an effective characterization cannot exist even for the case of 3-uniform hypergraphs. However, several necessary or sufficient conditions can be found in the literature; here, relying on a result of S. Behrens et al., we present a sufficient condition for the 3-graphicality of a degree sequence and a polynomial time algorithm that realizes one of the associated 3-uniform hypergraphs, if it exists. Both the results are obtained by borrowing some mathematical tools from discrete tomography, a quite recent research area involving discrete mathematics, discrete geometry and combinatorics.

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