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Ron Aharoni, Eli Berger, Joseph Briggs, Erel Segal-Halevi and Shira Zerbib*,
zerbib@iastate.edu. *Fractionally balanced hypergraphs and fair division*. Preliminary report.

An r -partite hypergraph is fractionally balanced if there exists a non-negative function on its edge set, that has constant degrees in each vertex side. Using a topological version of Hall's theorem due to Aharoni and Haxell (2000), we prove lower bounds on the matching number of such hypergraphs. This yields results in questions concerning fair division of cakes among hungry players. (Received August 24, 2020)