

# An Infinite Family of Connected 1-Factorisations of Complete 3-Uniform Hypergraphs

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A connected 1-factorisation (C1F) is a 1-factorisation of a hypergraph for which the union of each pair of distinct 1-factors is a connected hypergraph, and a uniform 1-factorisation (U1F) is a 1-factorisation of a hypergraph for which the union of each pair of distinct 1-factors is isomorphic to the same subhypergraph. Chen and Lu [Journal of Algebraic Combinatorics, 46(2)475–497, 2017] describe a family of 1-factorisations of the complete 3-uniform hypergraph on  $q + 1$  vertices, where  $q \equiv 2 \pmod{3}$  is a prime power. In this talk, I will discuss their construction, and show that it yields a C1F only when  $q = 2, 5, 11$  or  $q = 2^p$  for some odd prime  $p$ , and a U1F only for  $q = 2, 5, 8$ .