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Yair Caro, Douglas B. West* (west@math.uiuc.edu) and **Raphael Yuster**. *Equitable orientations of hypergraphs.*

An *orientation* of a hypergraph chooses for each edge a linear ordering of its vertices. For $1 \leq p < r$, an orientation of an r -uniform hypergraph is *p-equitable* if for each p -set of vertices, the numbers of times it occupies the various p -sets of positions differ by at most 1. We prove that every r -uniform hypergraph has 1-equitable and $(r-1)$ -equitable orientations. The special case $r = 2$ (graphs) is well known, stating that some orientation has indegree and outdegree differing by at most 1 at each vertex. For $1 < p < r - 1$, we prove a necessary condition, implying that some complete r -uniform hypergraphs have no p -equitable orientation. We conjecture that when p and k are fixed and each p -set of vertices appears in at most k edges, p -equitable orientations always exist when r is sufficiently large. We use the Local Lemma to prove that large enough r ensures an orientation that is “nearly” p -equitable, with each p -set of vertices occupying each p -set of positions at most twice. (Received July 28, 2011)