
IAN WANLESS, Monash University

Non-extendible latin cubes

A famous theorem of Hall says that every Latin rectangle can be extended to a Latin square. It has been known for some time that the analogous statement fails for all dimensions greater than 2. For example, not all Latin cuboids can be extended to a Latin cube. We (Bryant/Cavenagh/Maenhaut/Pula/W) construct $(2k + 1) \times (2k + 1) \times k$ Latin cuboids that cannot even be extended to a $(2k + 1) \times (2k + 1) \times (k + 1)$ Latin cuboid. This demonstrates that obstacles to extension can be encountered in "thinner" examples than previously thought possible.