1172-42-42 **Matthew Fickus*** (matthew.fickus@gmail.com). *Certifying the novelty of equichordal tight fusion frames.*

An equichordal tight fusion frame (ECTFF) is a finite sequence of equi-dimensional subspaces of a finite-dimensional Hilbert space that achieves equality in Conway, Hardin and Sloane's simplex bound. Any nontrivial ECTFF has both a Naimark complement and a spatial complement which themselves are ECTFFs. It turns out that whenever the number of subspaces is at least five, taking iterated alternating Naimark and spatial complements of one ECTFF yields an infinite family of them with distinct parameters. This makes it challenging to certify the novelty of any recently discovered ECTFF: how can one guarantee that it does not arise from any previously known construction in such a Naimark-spatial way? We discuss a new approach for addressing this issue, showing that any ECTFF is a member of a Naimark-spatial family originating from either a trivial ECTFF or one with unique "minimal" parameters. (Received August 11, 2021)