1003-X1-1540 **William Brian Muse*** (`Muse_Brian@colstate.edu`) and **K. T. Phelps**. *Orthogonal quadruple systems and 3-frames.*

Orthogonal quadruple systems are defined and investigated. Orthogonal quadruple systems with an additional nesting property are shown to provide a new construction of 3-frames $F(3, 4, n\{2\})$. Constructions for pairs of nested orthogonal quadruple systems are provided. Applications to 2-resolvable Steiner quadruple systems and highly nonlinear functions are discussed. Conjugate orthogonal 3-quasigroups are defined and constructed assuming that they will be an important ingredient in future product constructions of orthogonal Steiner quadruple systems. (Received October 05, 2004)