1108-42-294 **Sivaram K Narayan*** (`sivaram.narayan@cmich.edu`), Department of Mathematics, Central Michigan University, Mount Pleasant, MI 48859. *Inverse Factor Poset Problem for Finite Frames.*

A *frame* in an n-dimensional Hilbert space H_n is a possibly redundant collection of vectors $\{f_i\}_{i\in I}$ that span the space. A *tight* frame is a generalization of an orthonormal basis. We define the *factor poset* of a frame $\{f_i\}_{i\in I}$ to be a collection of subsets of I ordered by inclusion so that nonempty $J \subseteq I$ is in the factor poset if and only if $\{f_j\}_{j\in J}$ is a tight frame for H_n. The *inverse factor poset problem* inquires when there exists a frame whose factor poset is some given poset P. We determine a necessary condition for solving the inverse factor poset problem in H_n which is shown to be sufficient for H_2. We address how factor poset structure is preserved under orthogonal projections. Furthermore, we discuss how many non-isomorphic factor posets are there for a fixed dimension n and number of vectors k and how large can these factor posets be. This is a joint work with Alice Chan, Martin Copenhaver, Logan Stokols and Allison Theobold. (Received January 16, 2015)