1133-46-44 **Peter G Casazza*** (casazzap@missouri.edu), Department of Mathematics, The University of Missouri, Columbia, MO 65211, and **Desai Cheng** (chengdesai@yahoo.com), Department of Mathematics, The University of Missouri, Columbia, MO 65211. *associating vectors in C^n with rank 2 projections in R^{2n}: with applications.*

We will see that vectors in C^n have natural analogs as rank 2 projections in R^{2n} and that this association transfers many vector properties into properties of rank two projections. We believe that this association will answer many open problems in C^n where the corresponding problem in R^n has already been answered - and vice versa. As a application, we will see that phase retrieval in C^n transfers to a variation of phase retrieval by rank 2 projections on R^{2n}. As a consequence, we will answer the open problem: Give the complex version of Edidin's Theorem which classifies when projections do phase retrieval in R^n. As another application we answer a longstanding open problem concerning fusion frames by showing that fusion frames in C^n associate with fusion frames in R^{2n} with twice the dimension and the same fusion frame bounds. As another application, we will show that a family of mutually unbiased bases in C^n has a natural analog as a family of mutually unbiased rank 2 projections in R^{2n}. We will also show that equiangular tight frames in C^n have an analog as equiangular tight families of rank 2 projections in R^{2n}. (Received June 29, 2017)