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**Stephen Hilbert\*** ([hilbert@ithaca.edu](mailto:hilbert@ithaca.edu)). *Using N-dimensional Geometry as a Thread to Increase Geometric and Abstract Reasoning in Linear Algebra*. Preliminary report.

I use the idea of  $n$  dimensional (with  $n > 3$ ) geometry as a continuing thread in my sophomore level linear algebra course. This enables the course to strengthen the students' geometrical intuition and also to increase their skill at abstraction. The only prerequisite for this course is Calculus 2 and the majority of students are not math majors. Since computing solutions to linear systems of  $n$  equations and finding eigenvalues for  $n$  dimensional matrices is simple with technology, the course emphasizes how to use computations to expand geometric ideas to higher dimensions. One of the basic ideas is to use 2 and 3 dimensions as "labs" where we can see the geometry and then extend the geometric ideas to higher dimensions by using computational analogies. I will present examples of this technique as well as ways to add a geometric component to test questions and in class examples. The presentation will also include some examples to convince the students that learning about problems that are more than 3 dimensional is useful and interesting. (Received September 22, 2011)