962-35-1384 **Robert E DeVille*** (deville@math.bu.edu), Department of Mathematics, 111 Cummington Street, Boston, MA 02215. *Dimensional Reduction Algorithm for A Thin Domain.* Preliminary report.

We consider a thin domain $\Omega = \omega \times [0, \pi d]$, where d is a small thickness parameter and ω a region in the plane. On Ω, we consider a class of linear hyperbolic partial differential equations on this domain. We focus on the question: When can we replace our three-dimensional PDE defined on Ω with a two-dimensional PDE defined on ω, such that the dimensionally reduced equation tracks the behavior of the original equation sufficiently well (as measured in energy) for a sufficiently long time? We show that for d sufficiently small, we can do this, and we describe an algorithm for determining the two-dimensional PDE. Since solving these problems numerically can be computationally expensive, a reduction in dimension presents a clear computational savings. (Received October 03, 2000)