1145-55-1721   **Robert Ghrist*** (`ghrist@math.upenn.edu`). *Topological Defense Analysis: the how and why of US Department of Defense research.*

Many mathematicians have trepidations about working with the US Department of Defense on research. While respecting those reservations, I am going to argue in this talk that engaging with technical aspects of national defense is a positive good for mathematics. This talk will be part retrospection, part instruction-manual, and part vision for better engagement of the mathematics community with society. Along the way, I'll talk about novel applications of algebraic topology to sensor networks, signal processing, threat detection, target tracking, and pursuit problems. (Received September 24, 2018)