

WINNING PROPOSAL

Template Library for Mimetic Physics Simulation

DARPA Grant
Awarded in Spring 2020

GRANT WINNER

Blair Perot, Ph.D.

Mechanical and Industrial
Engineering

University of Massachusetts
Amherst

“Polyplexus allows DARPA to interact with a much larger audience than in the past. It helps smaller research groups participate in DARPA projects, and it enables DARPA to fund more innovative research topics and to be more flexible about its funding allocations. ”

HOW

Collaborating Across Areas of Expertise and Institutions

Posted nearly 20 Evidence and Conjectures μ Pubs; engaged with 5 other Plexors from different universities

Bridged physics, mathematics, simulation and computer science to simplify the mathematical framework required to understand computational physics simulations.



WHAT

Disrupting the Status Quo

- Enables coupled multi-material and physics problems to be solved
- Provides a practical C++ library that can be used to implement all mimetic numerical methods that never violate physics
- Begins to change how computational scientists think about physics simulation

WHY

Powering Research Sponsors

Benefits DARPA research in:

- Accurate physics-based simulations
- Materials science
- Uncertainty quantification