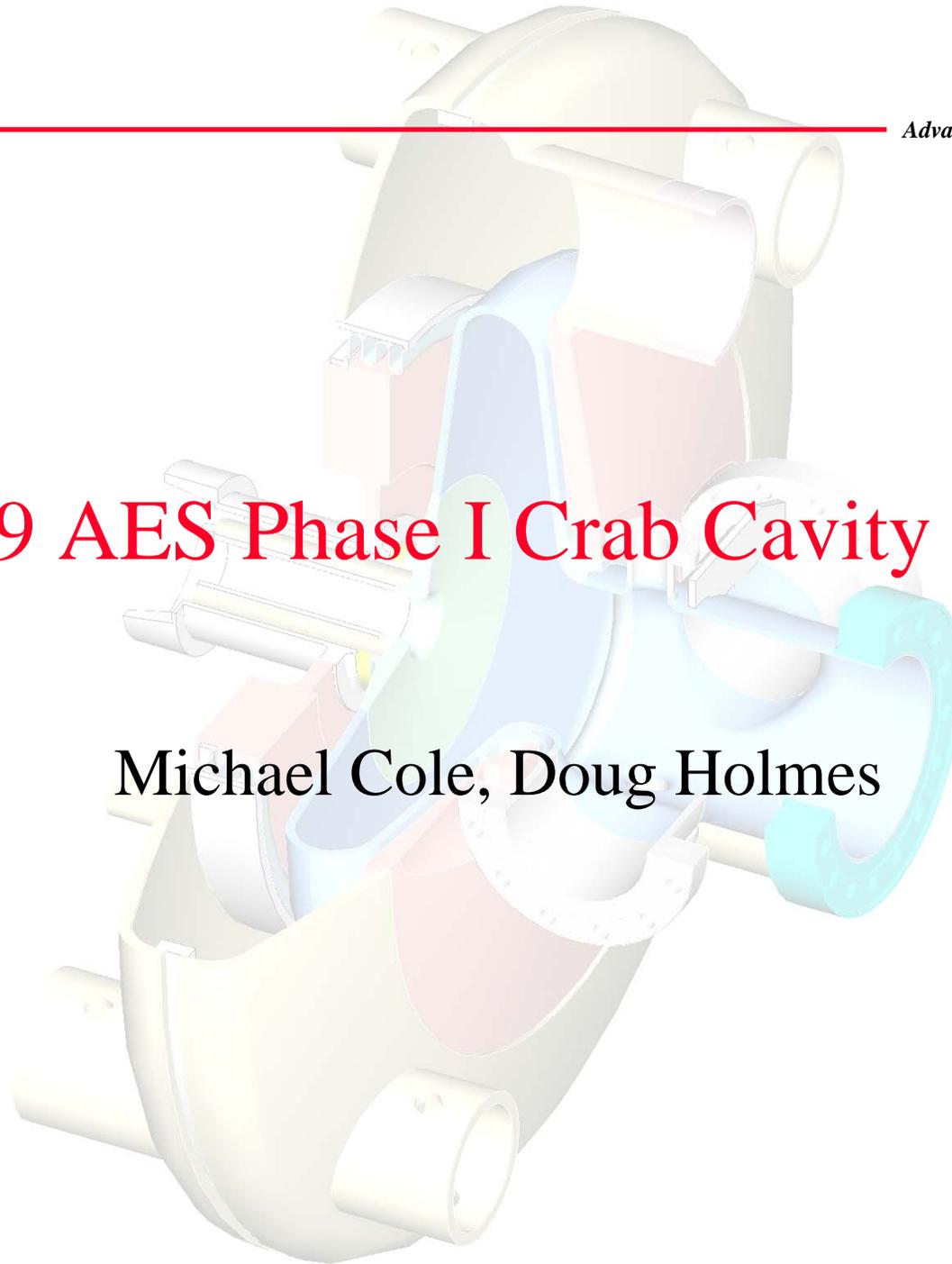


FY 09 AES Phase I Crab Cavity SBIRs

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SBIR Program Format

Advanced Energy Systems, Inc.

- Phased Program
- Phases Awarded Independently
- Phase One Starting June/July 09 (Est)
 - 8-9 Months
 - Limited Program
 - 500 Hours (13 Man Weeks)
 - Feasibility Study
 - Costing Study for Phase Two
 - Awards mid to late April
- Phase Two
 - Based on successful Phase One, Late Summer 2010 Award.
 - Phase Two is proposed via Phase One report.
 - Two year program \$750K max Level Funded
 - Year two technically optional for DOE
 - Detailed Design, Hardware, and Test phase



Submitted SBIRs

Advanced Energy Systems, Inc.

- The Crab Cavity: AES (Cole), BNL, LBL, and SLAC
- Couplers for the Crab Cavity including LOM, SOM, HOM, and FP: AES (Cole), BNL, LBL, and SLAC
- A Cryostat for use with the Crab Cavity: AES (Holmes) and FNAL
- Crab Cavity Tuning Devices: AES (Holmes) and FNAL
- These four SBIRs are highly interdependent since the designs developed in each impact the others. Furthermore, the scope of each topic area is broad enough that all of these topics cannot be addressed with the resources of only a single grant. If AES is awarded all four we will use a systems approach to the design and engineering solutions.
- This approach successfully employed with Cavity and Coupler SBIRs for NSLS2.

Prototype Crab Cavity

Advanced Energy Systems, Inc.

- Collaborators are AES, BNL, LBL, and SLAC
- Phase 1
 - Preliminary Design of Cavity
 - Coordinate transfer of Physics Design
 - Develop initial mechanical solid model
 - Perform Initial Thermal and Structural Analysis
 - Preliminary Mechanical Design and Fabrication Feasibility Study
- Phase 2
 - Complete mechanical design with supporting thermal/structural analysis.
 - Generate complete fabrication drawing package for the Crab Cavity.
 - Fabricate Prototype Crab Cavity
 - Perform BCP and HPR on Prototype Crab Cavity at AES if our facilities can accommodate it. We anticipate that we will be able accommodate an 800 MHz elliptical crab cavity.
 - Support Crab Cavity VTF testing at BNL

Crab Cavity Couplers

Advanced Energy Systems, Inc.

- Collaborators are AES, BNL, LBL, and SLAC
- Phase 1
 - Preliminary Design of Couplers
 - Coordinate transfer of Physics Design
 - Develop initial mechanical solid model
 - Perform Initial Thermal and Structural Analysis
 - Preliminary Mechanical Design and Fabrication Feasibility Study
- Phase 2
 - Complete mechanical design with supporting thermal/structural analysis.
 - Generate complete fabrication drawing package for the Couplers for a Crab Cavity.
 - Fabricate Prototype Couplers
 - If the concurrent Crab Cavity SBIR is awarded then we would also:
 - Perform BCP and HPR on Prototype Crab Cavity at AES if our facilities can accommodate it. We anticipate that we will be able accommodate an 800 MHz elliptical crab cavity.
 - Support Crab Cavity VTF testing at BNL



Crab Cavity Cryostat

Advanced Energy Systems, Inc.

- Collaborators are AES and FNAL
- Establish cryostat system specification that meets CERN safety regulations
- Develop cryostat requirements for Crab Cavity operation.
- Investigate 2°K vs. 4°K operation.
- Develop preliminary mechanical design of cryostat.
- Review cryostat design with CERN.
- Prepare the Phase II project report for Cryostat final design and manufacturing estimate.

Crab Cavity Tuners

Advanced Energy Systems, Inc.

- Collaborators are AES and FNAL
- Develop requirements for Crab Cavity tuning and specifications for tuner system.
- Generate tuner concepts based on cavity geometry and possible tuning methods.
- Evaluate tuning concepts and down select tuning system.
- Review the tuner system design parameters with respect to implementation at CERN.
- Develop mechanical design of the tuner.
- Prepare the Phase II project report for tuner final design and manufacturing.