1. **Research Title:** *Wall-Modeled LES of Shock-boundary layer interaction (SBLI)*

2. **Individual Sponsor:**

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3. **Academic Area/Field and Education Level:** Computer Science, Mechanical Engineering, Aerospace Engineering (Ph.D. level)

4. **Objectives:** The objective of this proposed 3-year DAGSI project is to develop/validate a wall-modeled large-eddy simulation computational framework to model shock-boundary layer interaction phenomena relevant to scramjet inlets and isolators.

5. **Description:** Large-eddy simulations of basic shock-boundary layer interaction (SBLI) phenomena is limited to Reynolds numbers reduced by an order of magnitude to those encountered in real life Scramjet combustors due to computational cost restrictions. It is the objective of this study to develop/augment an LES CFD framework to include wall modeled LES approaches such as a slip wall and/or consistent hybrid RANS/LES treatments. Attention to efficiency and scalability to large number of CPU's on advanced HPC architectures will be emphasized. The code will be validated against experimental and DNS databases at various Reynolds numbers while examining the unsteadiness both in the real and spectral domains.

6. **Research Classification/Restrictions:** Unclassified/Unlimited.

7. **Eligible Research Institutions:**
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