Planning Session (Day 1)

Bifurcation and Model Reduction Techniques for Large Multi-Disciplinary Systems

University of Liverpool, UK, June 2008

Context of Day 2 Discussions

- Workshop goal
  - Through cross-discipline interaction, improve the effectiveness and versatility of computational methods for representing and interpreting large, multi-disciplinary systems

- General approach
  - Encapsulate shared interests and address key challenges in test cases ("benchmark" problems)
  - *Go beyond presentations*

- Implementation: Day 2 afternoon discussions
  - Discuss supplied Questions in each of 2 groups
    - Cross-discipline commonalities and differences
  - Re-assemble all participants and summarize group findings
  - Discuss and propose appropriate test cases
  - Solicit test-case mentors

Questions

- What are the similarities in dynamics that have been described at this workshop?
    - If so, how are the applied algorithms similar?
    - If so, where can algorithms used in one discipline successfully migrate to another discipline?
- What are the main weaknesses in algorithms for dynamics of shared interest?
- Are there algorithms in their infancy that show promise for addressing these weaknesses?

Group summaries addressing these questions will fuel further discussion on what test cases would be helpful to propose and study

Some Criteria for a Good Test Case

- Representative and well-understood physics
- Simple to express mathematically
- Relatively easy to compute responses from input data
- Scalable to make more demanding computationally
- Addresses group findings

Collaboratively explore a limited number of test cases and seek comprehensive understanding