

## **Preparing Multi-physics, Multi-scale Codes for Exascale HPC**

The pendulum is just beginning to swing toward significant change in the way that application codes are designed, configured, and implemented. It is clear that many applications targeting exascale capability computing will need to be at best reconfigured and at worst rewritten. As usual, there will not be one solution for all codes, nor even within a single code. But the good news is that 1) there appears to be broad acceptance regarding the scale of change needed, and 2) the changes can be made so that they can effectively exploit a diversity of (including current) architectures as well.

In this talk I will use three application codes as a context for discussing some of the issues involved in creating codes for use on exascale machines, examine some architecture features that we currently see which could be exploited for these goals, and make a prediction regarding the programming model for exascale platforms.