Charge for the Fermilab Detector R&D External Review

In preparation for the next triennial review of the DOE Office of High Energy Physics (OHEP) general detector R&D portfolio, anticipated for the summer of 2015, the Fermilab directorate requests a review of the associated Fermilab detector R&D program. Since the last triennial review, U.S. detector R&D researchers have developed a common vision for detector R&D manifest in the [Snowmass Instrumentation Frontier report](http://www.slac.stanford.edu/econf/C1307292/docs/Instrumentation.html), and the broader U.S. particle physics community has strongly endorsed the Prioritization Panel for Particle Physics Projects ([P5) report](http://science.energy.gov/hep/hepap/reports/) which contains the following two recommendations regarding detector R&D:

**Recommendation 27**: “Focus resources toward directed instrumentation R&D in the near-term for high-priority projects. As the technical challenges of current high-priority projects are met, restore to the extent possible a balanced mix of short-term and long-term R&D.”

**Recommendation 28:** “Strengthen university-national laboratory partnerships in instrumentation R&D through investment in instrumentation at universities. Encourage graduate programs with a focus on instrumentation education at HEP supported universities and laboratories, and fully exploit the unique capabilities and facilities offered at each.”

We request that you assess the quality and impact of Fermilab detector R&D efforts conducted in the last several years and to assess the merit, feasibility and alignment of proposed activities with the Snowmass vision and P5 recommendations for the U.S. detector R&D program. In particular we request that you:

1. Evaluate the impact and promise of the group’s research efforts in detector R&D:
2. The quality and impact of the Detector R&D by the group in the past three years.
3. The scientific significance, merit, and feasibility of the proposed future program and the competence and promise of the group for carrying it out.
4. The adequacy of resources for carrying out the proposed research, and cost-effectiveness of the research investment;
5. How well do the group’s proposed activities align with the Snowmass vision and P5 recommendations?
6. Assess how effectively the detector R&D effort has exploited and leveraged existing facilities at Fermilab and the importance of these facilities to the future proposed program of work. Evaluate whether additional facilities are needed.
7. Evaluate Fermilab’s status and plans for collaborative efforts with universities, other national labs, and industry, in the general areas of detector R&D and technology transfer. Has Fermilab been effective in maintaining and seeking out additional partners for collaborative research?

Fermilab will provide relevant information in advance of the review which addresses these items and facilitates reviewer evaluations. Upon the completion of the review, we request that the review committee submit a letter summarizing their findings and evaluations.