

# Non-Particle Physics

Fermilab Long Range Planning Meeting

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# Preamble

- Core competencies in accelerators, detectors, computing, data analysis, particle theory
- Fermilab has always, to some degree, applied these capabilities to non-particle physics
- For the future, what is the appropriate level for such activities? Should they be expanded?
- Key criteria: benefits to FNAL, our user community, DOE, and wider public. Benefits can be “indirect” and still be significant, e.g.
  - Keep place dynamic and attract excellent researchers interested in interdisciplinary activities
  - Closer contacts with other communities, introduction to new ideas, ways of thinking
  - Contribute to solution of problems more relevant to society could produce goodwill for our more esoteric projects
- Downside is the risk of diversion of resources from core mission with no direct or indirect return

# Preamble - continued

- We are assuming in our discussions that Fermilab is determined to retain its focus on accelerator – based particle physics and that the program we consider must, therefore, be of limited scope. We are not considering an extensive diversification of the lab’s mission or movement to a multi-program lab. However, we will consider areas where Fermilab core competencies overlap or complement those of a non-particle physics area and where benefits, even if somewhat indirect, can accrue to the laboratory, the user community, and the DOE.

# Goals

1. To express clearly the advantages to Fermilab, the user community, and the DOE of limited involvement in areas that are not particle physics;
2. To discuss and define criteria and decision mechanisms that can be used to determine what projects Fermilab should be involved in. This should include discussions of how closely the projects should conform to our existing set of skills, how closely they should relate to the core part of the program, etc.;
3. To discuss how to evaluate the benefits and costs of a particular program to Fermilab, the user community, and DOE;
4. To identify an initial group of outstanding projects that can be pursued and can be used as test cases

# Goals - continued

5. To propose and ongoing method for identifying new projects
6. To discuss how to fit these projects into the overall program so that they can provide maximum benefit to the lab, the user community, and the DOE;
7. To describe mechanisms by which the progress of such projects can be tracks and the costs and benefits assessed to decide whether to continue them, terminate them, or spin them off.

## Initial Project Areas

- Computational Physics
- Computer Science
- Uses of Existing Machines
- Possible uses of future machines – e.g. a low energy linear accelerator
- Medical Physics/Therapy
- Biophysics
- Others

# Report Contribution

- The write-up will consist of
  - summaries of the discussion of goals 1-7 and our list of core competencies along with our conclusions and recommendations and
  - discussions of each of the specific projects that we consider along with suggestions of which ones to pursue and how to proceed.