Steve Geer

Neutrino factory physics study: meeting goals

- In october 1999 we were asked by the Fermilab directorate to embark on a study of the physics potential of neutrino factories and deleiver a report by 31st March 2000.

- A substantial number of people have made contributions to the study over the last few months.

- The goals of the meeting are:

  1. Review the material that we need to summarize in our report.

  2. Identify things that are missing and see if/how we can accomplish them before 31st March.

  3. Discuss the material/issues/conclusions that we need to describe in the report.

Physics Study Charge

The charge for the group will be to deliver a concise report by March 31, 2000 that will explicitly include:

1. The physics motivation for a neutrino source based on a muon storage ring, operating in the era beyond the current set of neutrino oscillation experiments.

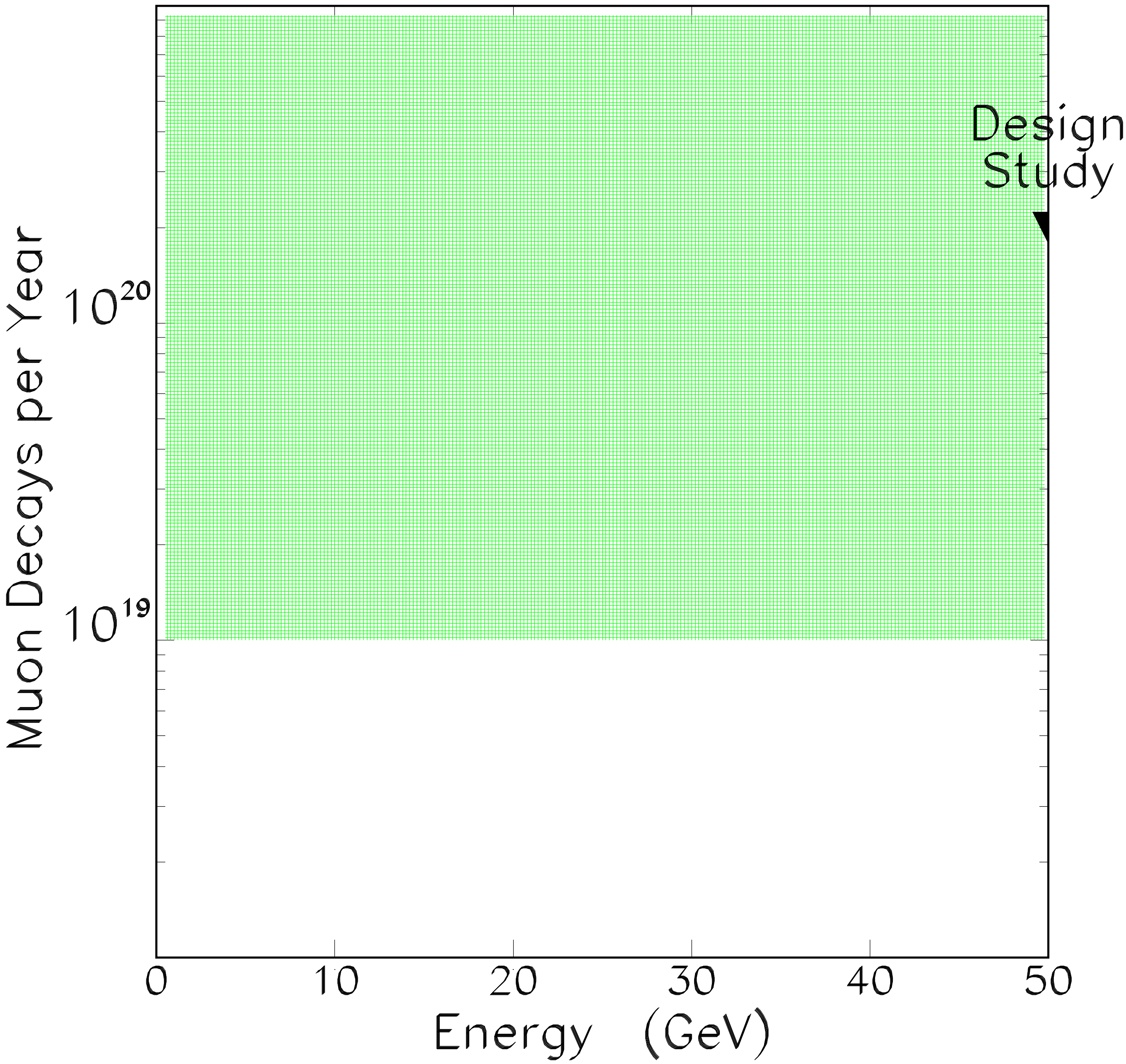
2. The physics program that could be accomp–lished at a neutrino factory as a function of:

   (a) The stored muon energy, with the maximum energy taken to be 50 GeV.

   (b) The number of muon decays per year in the beam–forming straight section, taken to be in the range from 10^{19} to 10^{21} decays per year.

   (c) The presence or absence of muon polariz–ation within the storage ring.

   (d) For oscillation experiments, the baseline length including investigations evaluating matter effects.



There is a companion nu factory design study (co–ordinator: N. Holtkamp) to investigate design of a facility at the upper end of the parameter space to be explored by the physics study.

Organization

- **Co–ordinators: S. Geer, H. Schellman**
- **Five working groups, each with a local convener (R. Bernstein, S. Parke, D. Harris and E. Hawker)**
- **About 60 people have subscribed to the physics study email distribution list, of which about 40 people are actively contributing (so far) in one way or another.**

Group 1: **Beam properties**

Group 2: **Detectors & backgrounds**
R. Bernstein (convener)

Group 3: **Oscillation theory & scenarios**
S. Parke (convener)

Group 4: **Oscillation measurements**
D. Harris (convener)

Group 5: **Non–Oscillation physics**
E. Hawker (convener)

Writing the report

- **Editorial board:** The local conveners are a natural editorial board for the report. They will need help (text/figures) from many of you in order to make sure we include all the material, etc.

- **Author list:** As a starting point, plan to use the email list: nu–factory–study@fnal.gov Instructions on how to subscribe to this list are pinned on the notice board outside.

- **Schedule:** Would like to have a draft report mid–March (two weeks before the deadline). The draft will then be made available for comments. Drafts of some of the sub–sections may be available on a faster time–scale.

Meeting Details

Speakers:

Please give a hard copy of your talk (or the plastic) to the session chair. We hope to have copies of the talks bound and available shortly after the meeting.

If you have your talk in a ps or pdf file please send it to sgeer@fnal.gov. We will make it available on the web.

Dinner:

Tonight at 7:00pm at Emilios (Naperville) we will have a "pay as you go" dinner. If you are interested please sign up on the sheet outside during the coffee break. Maps will be available later. If you need transport, indicate on the sign–up sheet.

We hope you enjoy the meeting