

One or Two Detectors?

**Ref - J. Brau, T. Omori, R. Settles, PLEN0059,
2005 ALCPG & ILC Workshops – Snowmass, U.S.A.**

Arguments for Two Complementary Detectors

Scientific & Technical Reasons

- Cross-check and Scientific Redundancy
- Complementarity
 - Address challenges differently
- Future collider options
 - Prepare differently for future collider developments - eg. gamma-gamma
- Competition - push experimental results
- Efficiency - one detector always ready to take data
- Reliability - if one detector has major problem
- Insurance - if two address beam environment differently
- Scientific Opportunity - for young scientists and engineers
- Funding draw - based on multiple areas for contributions

Arguments for Two Complementary Detectors

Counter points of view

- Critics of this argument make a number of points, including the following:
 1. In the absence of sufficient funding for two detectors/IRs, a single IR can provide a cross-check by "repeating a collider run".
 2. Another often cited possibility is to organize two independent analysis chains within the same detector collaboration in order to promote competition and redundancy.
 3. With proper organization, the visibility for young physicists, and the opportunities to make significant contributions, can be enhanced within a collaboration.
 4. Reduced efficiency: the two-IR solution would mean that the tuning-for-two would require more effort than tuning-for-one would have, and the more complicated operation may yield less total luminosity than for one IR.