

Overview of the IN2P3 Involvement in the ILC Electron-Positron Collider Project in Japan

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- **Call for an electron-positron collider:**
 - In absence of new physics at LHC, high-precision study of the Higgs characteristics becomes more crucial than ever $\Rightarrow e^+e^-$ collisions are particularly well suited
 - Preserving the potential for much higher energies in future (top, BSM, HHH, ...) highly desirable \Rightarrow the collider should be linear
- **Motivation for ILC:**
 - Most mature technology & project (TDR on machine & detectors dates back to 2013)
 - Linac industrial feasibility validated by XFEL construction (European industry !)
 - Achieved detector R&D and physics studies demonstrate achievable physics performance
- **Status of ILC project:**
 - Proposed to be hosted in Japan, on nearly validated site (Tohoku region)
 - Japan examines the project in depth since 2013 \Rightarrow conclusion & government statement in Autumn
 - Bilateral preliminary discussions with several countries have started (e.g. Germany, France)

ILC at IN2P3

- **ILC landscape at IN2P3:**

- 8 labs active (\lesssim 50 people): CPPM, IPHC, IPNL, LAL, LLR, LPCC, LPNHE, LPSC
- Networking through Comité Collisionneur Linéaire (CCL)
- International involvement: ILD detector concept (70 institutes, 450 membres), worldwide coordination
- Intense activity with high impact on accel., det., phys. preparation:
 - ↪ Since 2013: \sim 15 PhDs, $>$ 50 journal publi., $>$ 100 international conf. talks

- **ILC focused activities at IN2P3 (since $>$ 15 years):**

- Accelerator: LINAC (couplers for XFEL), polar., beam background, nanobeam monitoring (SuperKEKb)
- Detector & event reconstruction: EM and hadron calorimetres, pixelated trajectometry, PFA
 - ⇒ has already irrigated several other exp. (e.g. LHC: ALICE, ATLAS, CMS, NA-61) & domains
- Physics: Higgs boson, top quark, fermion pairs
 - ⇒ impact on detector design optimisation

- **Prospects:**

- Prominent role for detector construction: EM & hadron calorimetry, tracking & vertexing
- Prominent role in partnership with industry for accelerator construction (based on XFEL, ESS)
- Perspective: around 50 staff physicists, plus post-docs and PhDs (and engineers)