

# **DRAFT 0**

## **Summary of ILC R&D and resources in Europe**

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### **1 Introduction**

### **2 Electron Sources**

#### **2.1 Laboratory /country**

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
<b>TOTAL</b>					

### **3 Positron Sources**

#### **3.1 CNRS/IN2P3/LAL-Orsay, France**

The deliverables in Jan 2008 are the following:

1. A European-based centre of expertise in high-finesse Fabry-Perot cavities filled with a passive mode-locked laser beam and associated optics for application to accelerators with a team of physicists and engineers experienced in the fields of unstable lasers resonators.
2. Results on the operations of very high-finesse stable Fabry-Perot cavities ( $F=30000$  and  $F>300000$ ) filled with a pulsed Ti:sapphire laser beam in the 1ps and 100fs time width regimes.

3. Results on the operations of very high-finesse unstable (concentric) Fabry-Perot cavities ( $F=30000$  and  $F>300000$ ) filled with a pulsed Ti:sapphire laser beam in the 1ps and 100fs time width regimes.

4. Reports and conclusion on the use of a Fabry-Perot cavity in pulsed regime to provide a polarised positron source at the ILC. Identification of further R&D

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
France	LAL-Orsay	1.5	0	30	IN2P3
TOTAL					

## 4 Damping Rings

### 4.1 Laboratory /country

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
TOTAL					

## 5 Ring To Main Linac

### 5.1 Laboratory /country

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
TOTAL					

## 6 Main Linacs

### 6.1 Superconducting RF cavities and cryomodules

#### 6.1.1 CNRS/IN2P3/LAL-Orsay, France

- Development of prototype power couplers
- Studies on conditioning of power couplers
- Technology development (surface studies, thin-film deposition).
- Industrialization studies of the TTF-III coupler for the European XFEL.

#### 6.1.2 CNRS/IN2P3/IPN-Orsay, France

- Characterization of piezoelectric components for cold tuning systems

#### 6.1.3 CEA/DSM/DAPNIA-Saclay, France

- Electropolishing of samples and 1-cell cavities
- Development and fabrication of piezo-tuner prototypes
- Integrated RF tests of cavities in the horizontal cryostat CryHoLab
- Development and fabrication of the re-entrant cold BPM with digital electronics
- HOM studies of beam based alignment at TTF
- Studies of the cavity quench properties (surface morphology, grain boundaries)
- Studies of cavity baking
- Industrialization studies of piezo-tuners for the XFEL

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
France	LAL-Orsay	12 (2006) 12 (2007)	900 220	~ 1,620 ~ 940	EU/DESY/IN2P3
France	IPN-Orsay	1.5 (2006) 0.5 (2007)	30 12	~ 120 ~ 42	IN2P3 + EC/CARE
France	CEA-Saclay (direct cost)	5.5 (2004) 12.5 (2005) ~12.5 (2006) ~12 (2007)	70 100 ~70 ~70	410 800 ~ 770 ~ 740	CEA + EC/CARE
France	CEA-Saclay (direct cost)	2 (2005) ~2 (2006)	50.5 ~50.5	140 ~ 140	CEA
France	CEA-Saclay	2.8 (2006) 1.4 (2007)	88	~ 260 ~ 86	CEA
TOTAL					

## 6.2 SCRF infrastructure

### 6.2.1 Laboratory /country

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
TOTAL					

## 6.3 Cryogenics

### 6.3.1 Laboratory /country

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
TOTAL					

## 6.4 RF power systems

### 6.4.1 Laboratory /country

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
TOTAL					

## 7 Beam Delivery System

### 7.1 CNRS/IN2P3/LAL-Orsay, France

- Beam-Beam simulation code development, including benchmarking of physics processes in GUINEA-PIG against known and trusted physics generators and implementation of spin transport into GUINEA-PIG. A detailed schedule can be consulted at <http://www.eurotev.org/e558/e941/e1422/e1436/BBSIM-draft.doc>
- Post-collision diagnostics lattice studies, based on beam tracking and GEANT-4 simulations, with emphasis on comparative evaluation of background conditions and the feasibility of possible post-IP diagnostics. A detailed schedule (including also work at a partner institute in Uppsala) can be consulted at: <http://www.eurotev.org/e558/e941/e1422/e1438/PCDL.doc>

### 7.2 CEA/DSM/DAPNIA-Saclay, France

- Collimation and final focus optics
- Beam stability of the head-on extraction scheme

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
France	LAL-Orsay	3.5 (2005) 4.0 (2006) 1.5 (2007)	0 0 0	220 240 120	EC/EUROTeV + IN2P3
France	CEA-Saclay (direct cost)	1.5 (2005) ~1.5 (2006) ~1.5 (2007)	4 4 4	100 100 100	CEA + EC/EUROTeV
TOTAL					

## 8 Instrumentation & Controls

### 8.1 CNRS/IN2P3/LAL-Orsay, France

The deliverables in Jan 2008 coincide with the ones for the positron source activity (see Section 3.1.1).

### 8.2 CNRS/IN2P3/LAPP-Annecy, France

In order to ensure a high luminosity it is important to stabilise the final focus quadrupoles. The requirement for the vertical displacement is a fraction of the beam size. The LAViSta group (Laboratories in Annecy working on Vibrations and Stabilisation) aims at characterising sensors to make the most sensitive measurement, simulate a quadrupole to predict its vibrational response to an external excitation and develop the feedback loop for the active stabilisation of the structure. This project is within the frame of EUROTeV from January 2005 to December 2007.

The same funding profile is expected for the 3 years from 2005 to 2007.

### 8.3 CEA/DSM/DAPNIA-Saclay, France

- Development and fabrication of the digital electronics boards for the TTF2 differential machine protection system.

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding Agency
France	LAL-Orsay	7.4(2006)	177.7	752	CNRS/IN2P3-EC/EUROTev
France	LAPP-Annecy	3.5 (2006)	63.6	271.2	CNRS/IN2P3
France	LAPP-Annecy	1 (2006)	22.3	83.6	EC/EUROTev
France	CEA-Saclay (direct cost)	0.5 (2005) ~0.3 (2006)	15 5	41.7 22.1	CEA

## 9 Operations and Reliability

### 9.1 Laboratory /country

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
TOTAL					

## 10 Conventional facilities & Siting

### 10.1 Laboratory /country

Short description of the work foreseen together with schedule and deliverables in 2006 and possibly in following years with 2006 resources in table below

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency

TOTAL					

## 11 Cost Engineering and Management Tools

### 11.1 CNRS/IN2P3/LAL-Orsay, France

- Participation to the ILC communication
- GDE and European network management

### 11.2 CEA/DSM/DAPNIA-Saclay, France

- GDE and European project management

Country	Institute	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)	Funding agency
France	LAL-Orsay	-1.6	0	123	IN2P3/CARE
France	CEA-Saclay	-0.3 (2006)	0	24	CEA
	(direct cost)	-0.3 (2007)	0	24	
TOTAL					

## 12 Summary and distribution of resources

System	FTE	Material budget (kEuros)	Total budget with personnel (kEuros)
TOTAL			

## 13 Conclusion