

First thoughts – April 2017

**EDM CIVIL ENGINEERING ETC**

# Beam delivery

- Polarized proton source
- Accumulator (Linac2/LEIR? Booster?) and transfer line capable of delivering  $2 \times 10^{10}$  ppb CW and  $2 \times 10^{10}$  ppb CCW
- Matched injection system

$$p = 0.7 \text{ GeV}/c, v/c = 0.6, KE = 233 \text{ MeV}$$

Somehow from the existing complex – options to be explored at CERN



# Civil engineering

- For a proper infrastructure study, we need to gather all the requirements like space/volumes, heating/ventilation, electrical, shielding, access, safety etc. We normally create a small working group with a technical expert in each field to study these issues.
- The best way to get the process going is to start doing some layout drawings
  - it looks a bit tricky though in the ISR area with all the existing technical galleries

Preliminary civil engineering study: ~50 kCHF approved

# Requirements

- Need input ASAP (possibly available from BNL study)
  - Tunnel cross-section, volumes
  - Required stability
  - Services (CV, EL, CRYO ...)
  - Shielding (RP, EL...)
  - Access, safety

# BNL 2011

- The experiment's cost as estimated mainly by C-AD personnel is given in Tables 13.1 and 13.2, below, and in more detail in Tables 13.3 - 13.7.
- In summary, the cost of the EDM ring itself is \$25.6M, including indirect costs. Including contingency raises its cost to \$39.5M, see Tables 13.1, 13.2 and 13.3.
- The ring tunnel (conventional) and the beam-line total costs depend on the location of the ring: \$29.2M with the ring at ATR and \$22.6M at SEB, including indirects and contingency.

Two possible sites: ATR – virgin, SEB – some reuse of existing facility

# Cost – systems 1/2

Given layout – will need to run through...

System	Group	Contact
[Source]		
[Acceleration]		
Transfer line		
Injection	ABT	Jan Borburgh
[Deflectors]	ABT	Jan Borburgh
Power supplies	EPC	
RF	RF	Olivier Brunner
Beam intercepting devices	STI	
Beam instrumentation	BI	Rhodri Jones
Controls	CO	
Vacuum	VSC	
Interlocks	MPE	

# Cost – systems 2/2

System	Group	Contact
Cooling and ventilation	CV	
Electrical systems	EL	
Transport	HE	
Survey	ACE	
Radiation protection	RP	Heinz Vincke