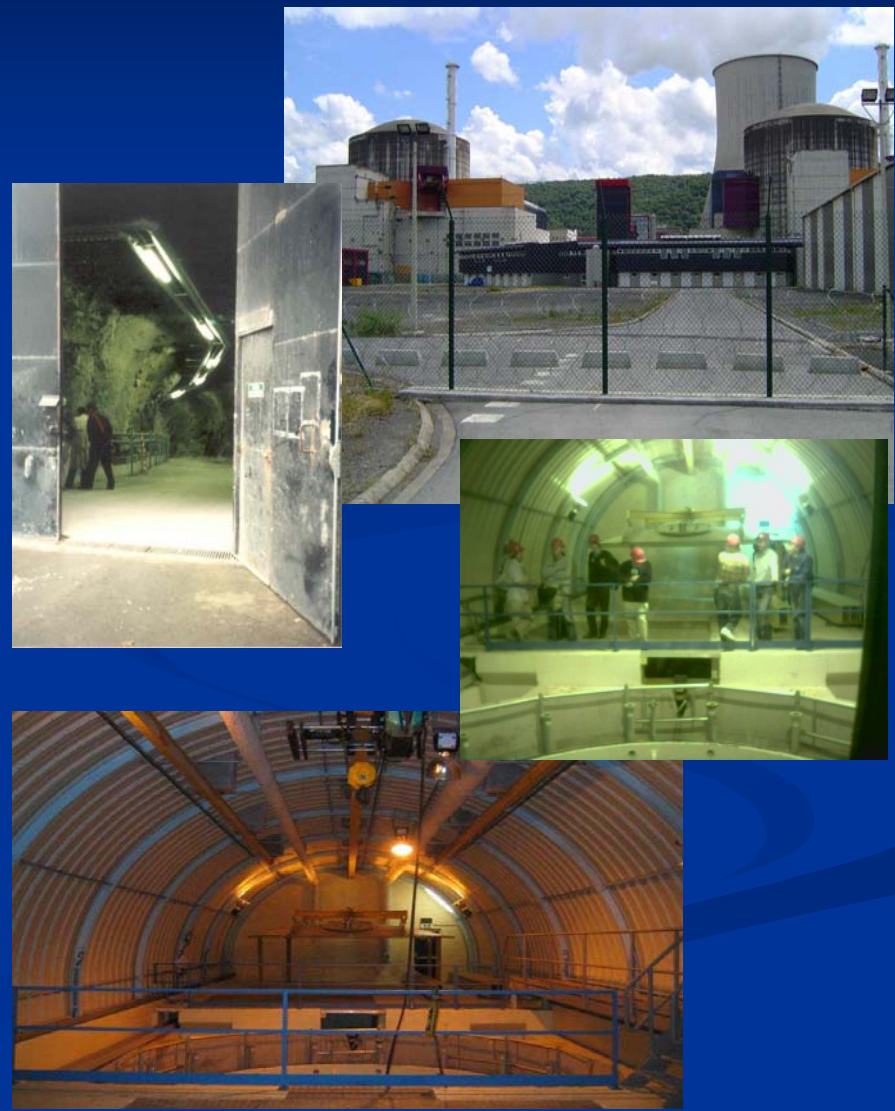
Double Chooz Goals

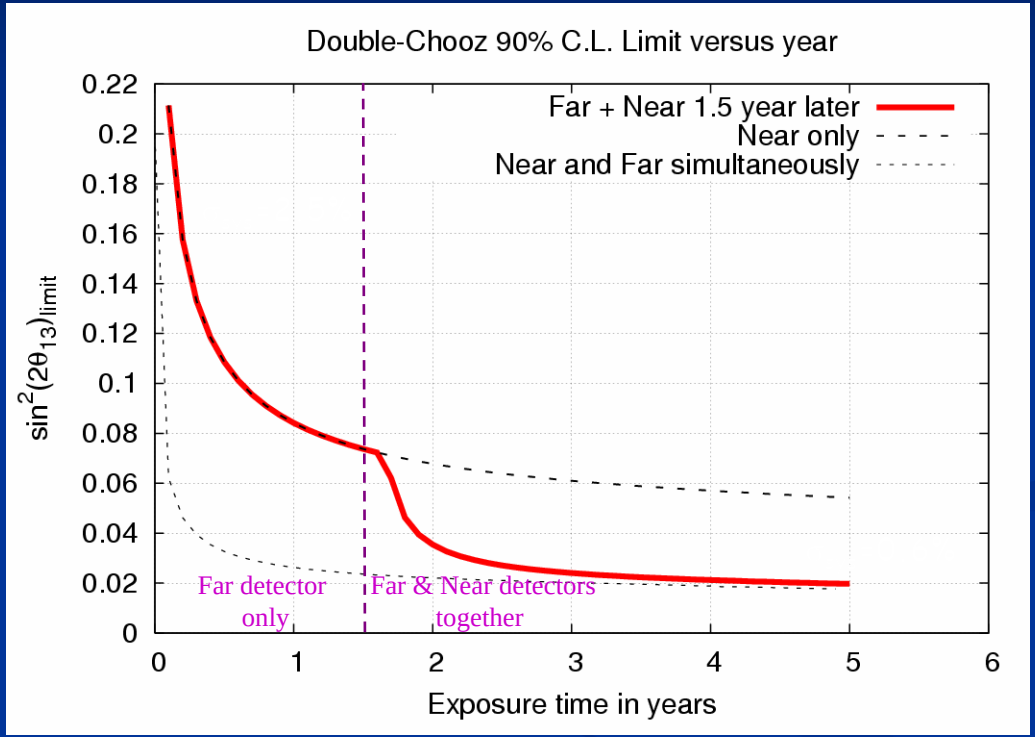
- ***Obtain*** first significant data on θ_{13} in a decade.
- ***Quick*** start - use existing Chooz facility and large experienced international collaboration
- ***Cover*** 90% c.l. allowed region from $\sin^2 2\theta_{13}$ 0.19 to 0.03 (~85%)
- ***Extend*** state-of-the-art in reactor neutrino experiments



R.Svoboda, March 2006

Sensitivity *Fast*

- Far Detector can start at the end 2007
- Near Detector can follow 16 months later.
- Double Chooz can surpass the original Chooz result in 3 months - even with a single detector



90% C.L. contour if $\sin^2(2\theta_{13})=0$ and
$\Delta m^2_{atm} = 2.8\ 10^{-3}\ eV^2$ known at 20% level from MINOS

The International Double Chooz Collaboration

22 Institutions, **95** physicists and Engineers

Double Chooz US: **36** physicists and engineers

7 University groups*

3 National Labs**

We have requested $4.8M to build roughly 40% of the detector, consistent with US group size

* Alabama, Drexel, Illinois Tech., Kansas State, LSU, Notre Dame, Tennessee

** Argonne, Lawrence-Livermore, Sandia

Our Collaborators *Ready to Build*

Far Lab ready for occupancy by April, i.e. *next month*

Outer diameter of Gamma catcher chimney
(125 mm, t=12mm)

CEA - DAPNIA/SIS

**Acrylic C
catcher**
**(Inner radius
Inner H = 3,5
t = 12mm)**

**Inner H = 5,674m
t = 3mm)**

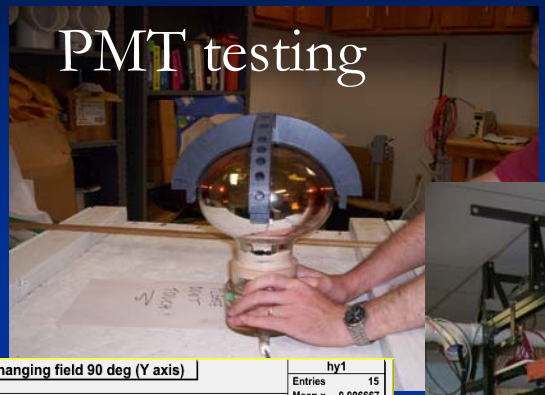
1/5 size prototype built and under test at Saclay since June 2005

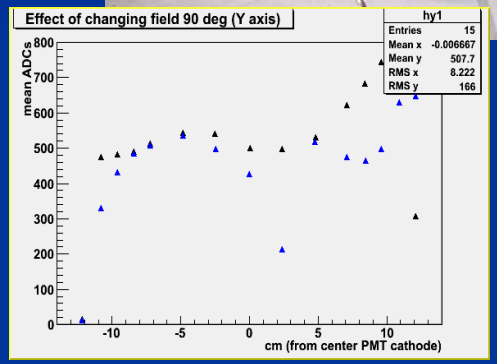
Muons VETO (shield)
Inner radius = 3.471m

Flash ADC system v.2 prototype under test at CAEN
Delivery to APC *this month*

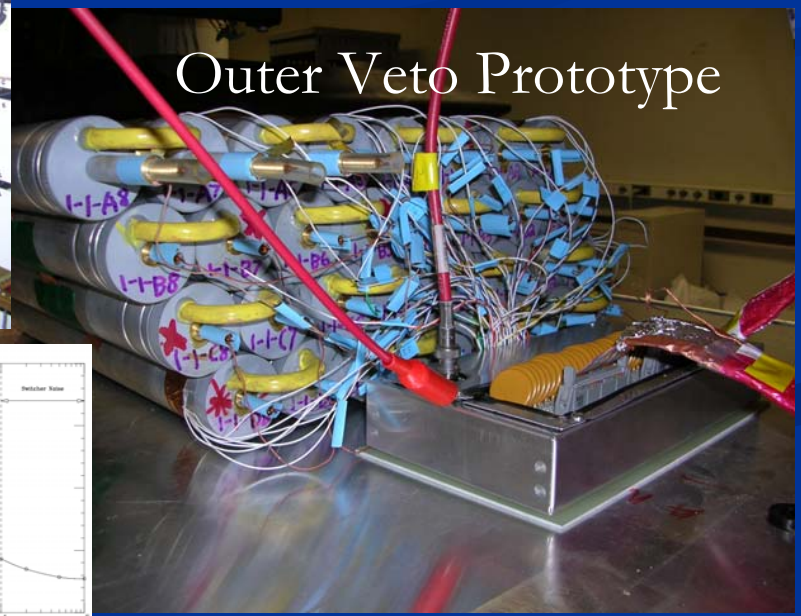
PXE based Gd-loaded scintillator design *ready* at MPIK. Associated filling systems being designed

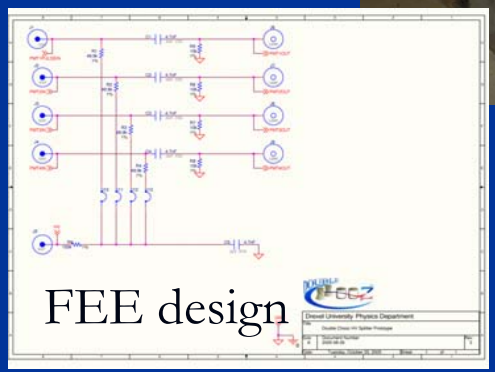
US Group: Critical Systems

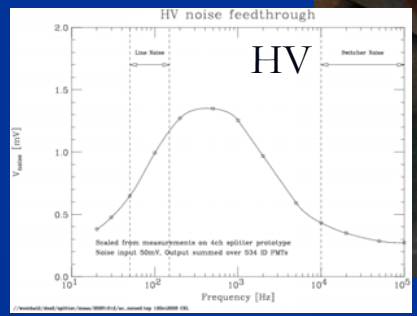




Photomultipliers & HV
Outer Veto
Calibrations
Front-End Electronics







Status in Europe

- France
  - Approved by both agencies (CNRS/IN2P3 and CEA) in Spring 2004 → 2 important points:
    - EDF: close relationship defined by letter June 05
    - Size and strength of the collaboration very strong
  - Last review: 20th of March 2006
  - 25% of the detector + all civil engineering
- Germany
  - Strong support of Max Planck Institute
    (Lindner new director at Heidelberg)
  - Universities: proposal to BMBF - to be decided next month
- Spain
  - joined recently. Smaller contribution , Spring 06

MOU this spring to build next year - get neutrinos end of 2007

Our Request

- Double Chooz is at an advanced stage
- Construction cost to U.S. less than $5M. Double Chooz does not significantly impact other projects for resources.
- A major goal (for us *and* APS study) is a *fast* measurement - to know where we stand with θ_{13} *ASAP*. (note: this could have a significant impact on future planning)
- We request from HEPAP a recommendation for a quick decision, without going to P5.