Starting OPERA data taking with the CNGS beam
Structure of the OPERA Experiment

31 target planes / supermodule (in total: 206336 bricks, 1766 tons)

Proposal: July 2000, installation at LNGS started in May 2003
First observation of CNGS beam neutrinos: August 18th, 2006
OPERA in pictures

Second Super-module

details of the first spectrometer

LNGS, August 21st

CNGS/OPERA starting

OPERA collaboration
CNGS beam performances

LNGS, August 21st

CNGS/OPERA starting
Integrated proton intensity delivered onto the CNGS target

August 18th, 13:40

August 21th, 8:25

$3^{17}$ pot
Pot per extraction as a function of time

Extraction 1
Sat, 19 Aug 2006 15:06:40 GMT
Sun, 20 Aug 2006 05:00:00 GMT

Extraction 2

LNGS, August 21st
CNGS/OPERA starting
OPERA collaboration
Event selection by using GPS timing informations

Cosmic rays background events

Δt first extraction (ns)

50 ms

Δt closest extraction (ns)

Zoom on the spill peaks

ID 100
Entries 107
Mean 0.1607E+05
RMS 3198.
Beam event

CC event originated from material in front of the detector (BOREXINO, rocks)
CC event in the first magnet

(forgive about the red-line fit)
Angular distribution of all events

Clean selected events

Cosmic muons

Zoom on Beam events 3.5° from below

Angular distribution of all events

Polar angle

Azimuthal angle

Clean selected events

Cosmic muons

Zoom on Beam events 3.5° from below
Conclusions

- The CNGS beam is operating smoothly with very good quality
- The tracking detectors of OPERA are taking data with practically no dead time
- More than 100 beam correlated events have been observed with a clean time distribution
- The recorded events show the expected tracking performances
- OPERA is now ready for the next step: observing neutrino interactions in the Emulsion Cloud Chamber bricks