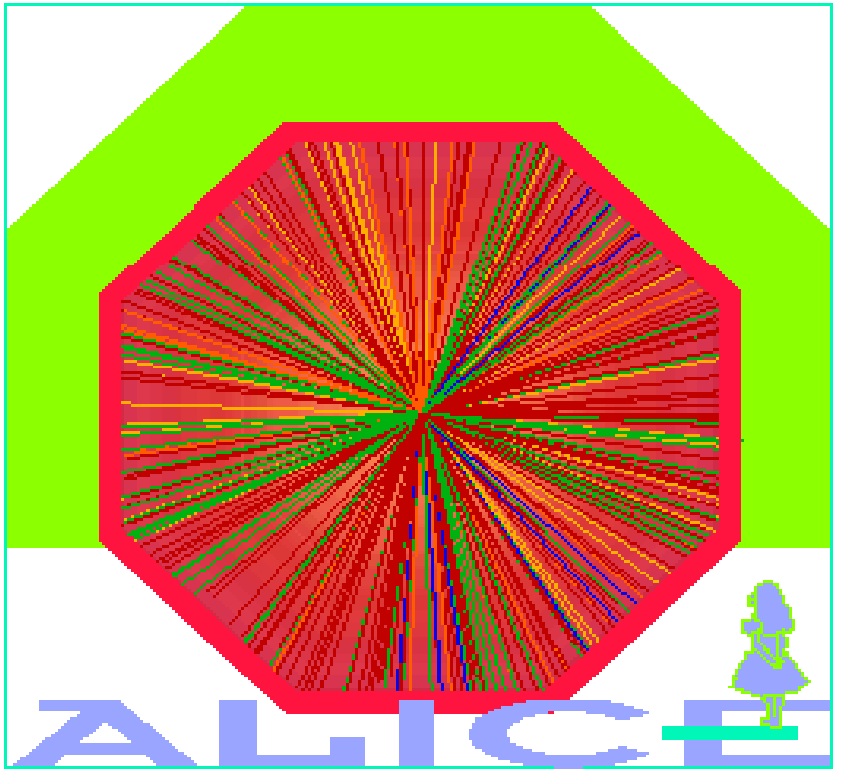
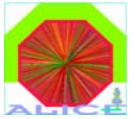
# ALICE Status
## 3rd CERN-Korea meeting

- ALICE
- Korean participation

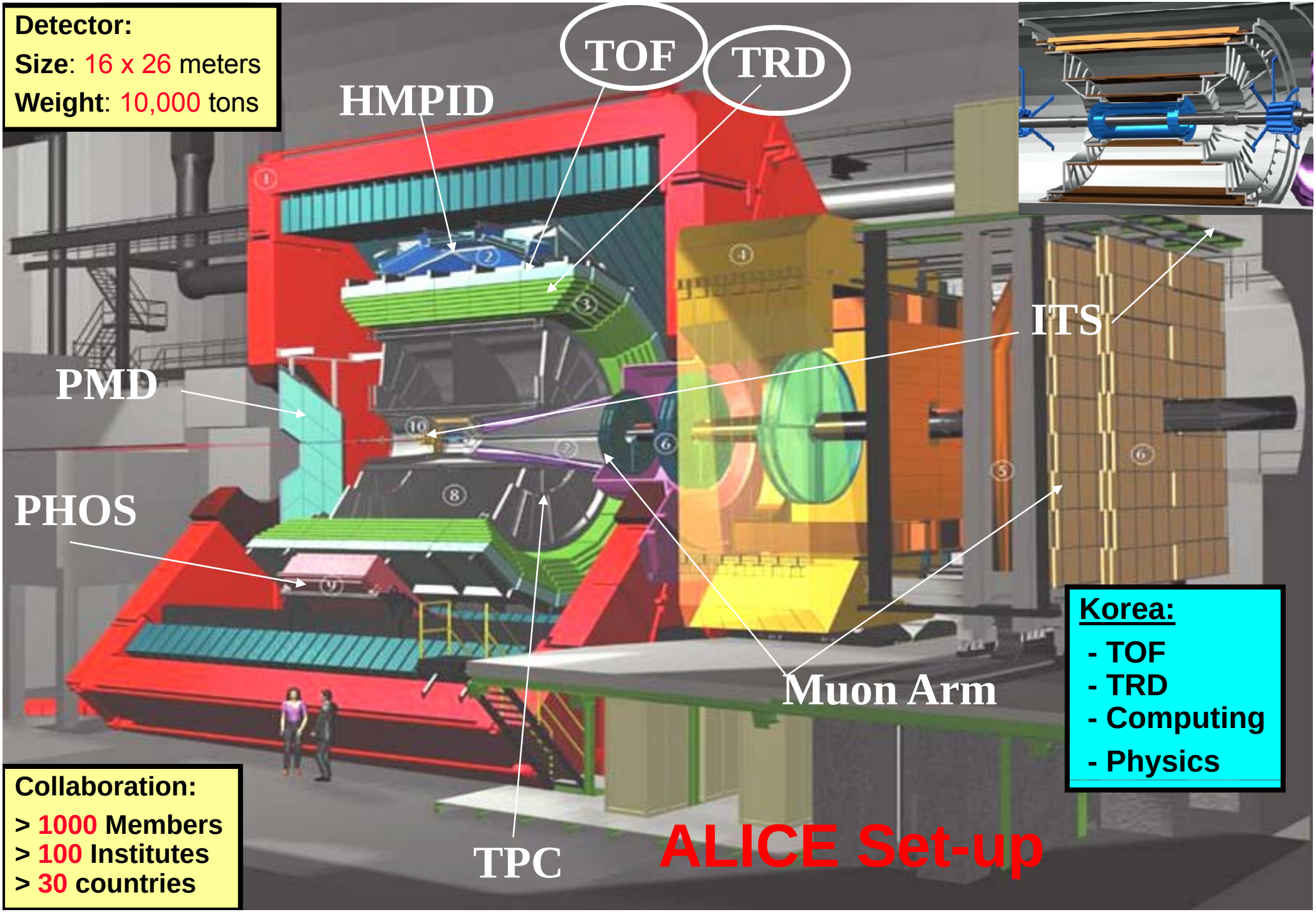


# Collaboration News

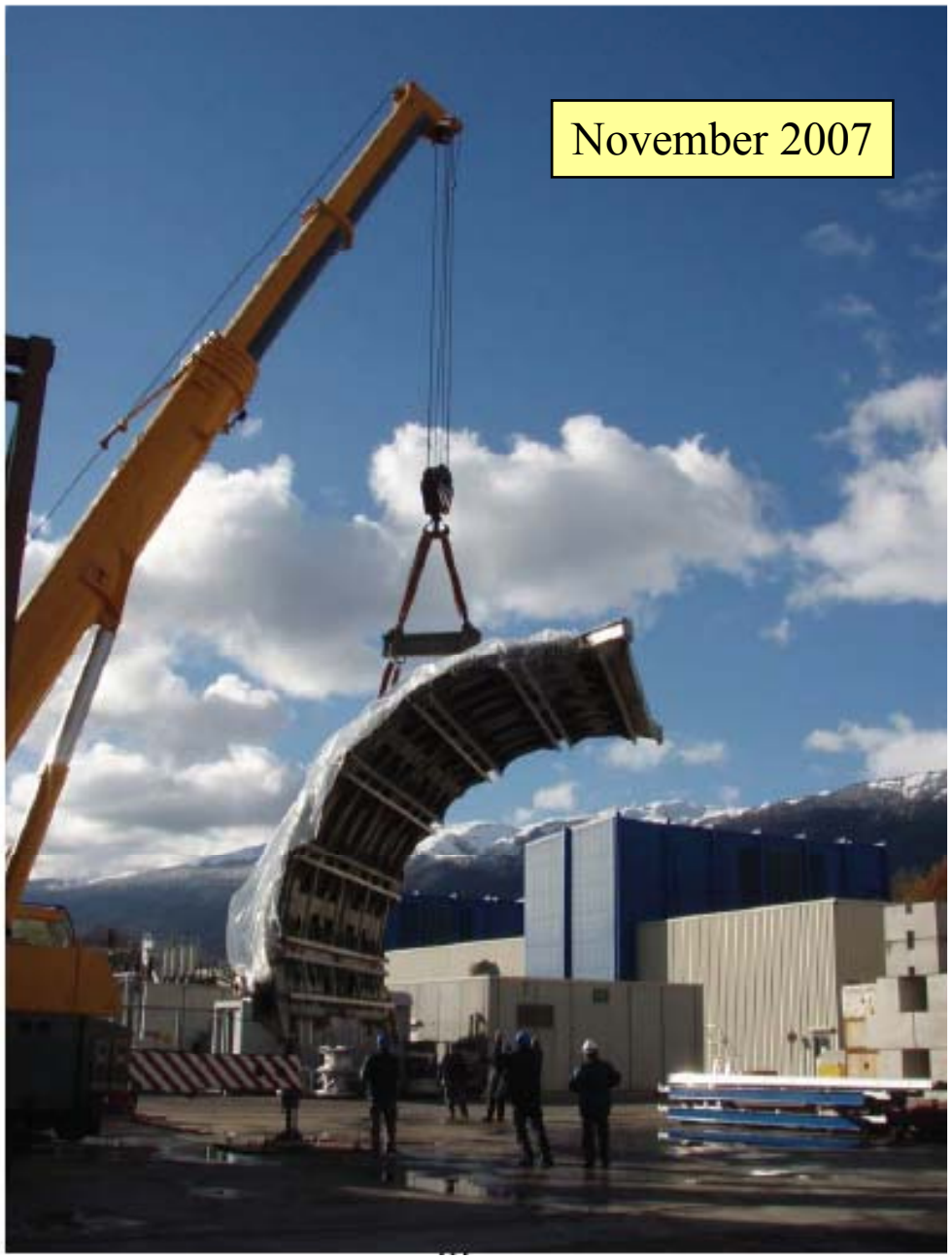


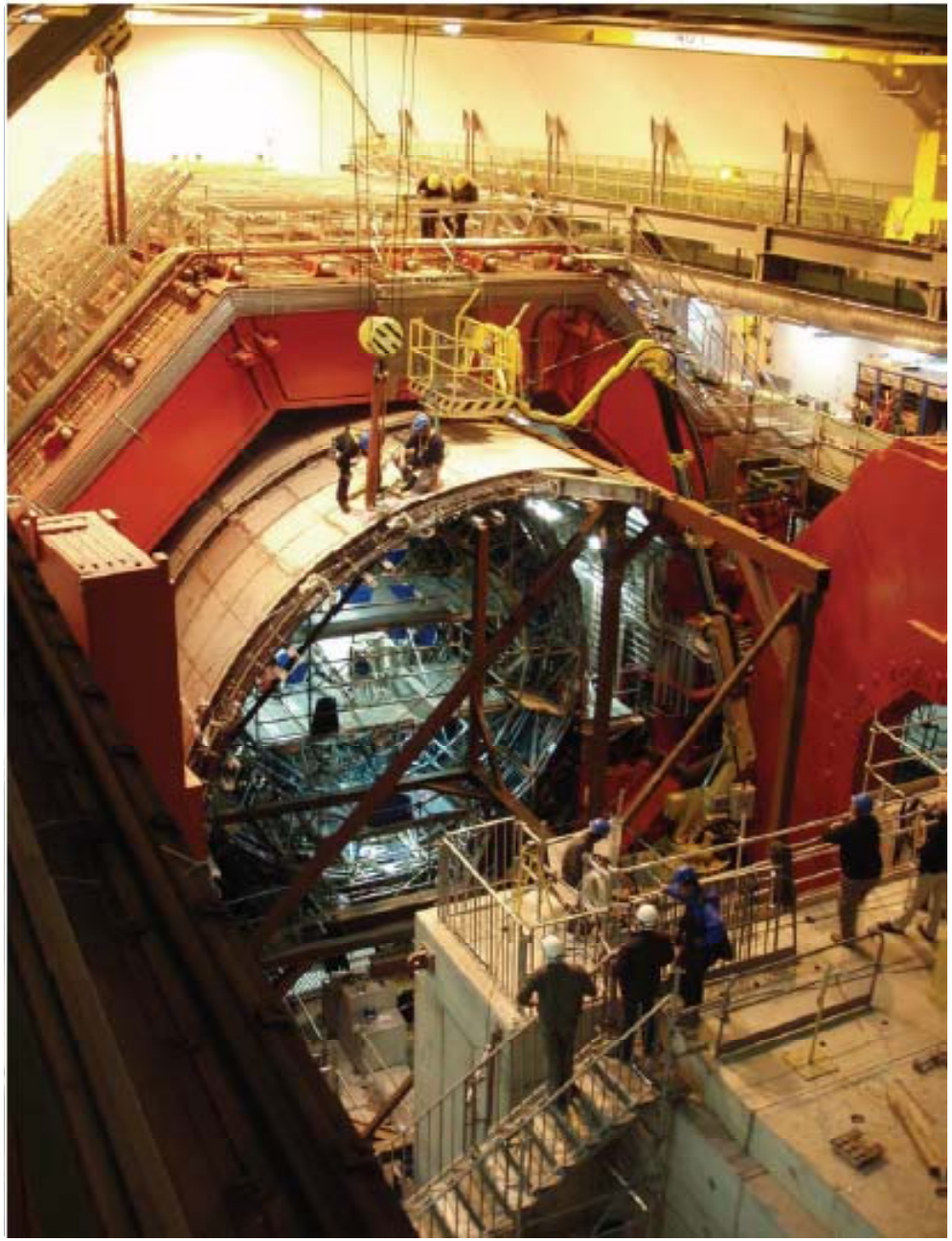
- **New Institutes (CB on 4 April 2008)**
  - ⇨ **Yonsei** (**Korea**) — **TRD, Physics**
  - ⇨ **Pusan** (**Korea**): replaces Pohang which left end 2007 — **Physics**
  - ⇨ Purdue (**USA**) — **EMCAL**
  - ⇨ Tennessee (**USA**); — **EMCAL**
  - ⇨ Istanbul (Yildiz Technical University**, Turkey**) — **Physics**

ALICE would like to thank the Korean FA for the constructive and successful discussions which allowed the two new Korean Institutes to join the Collaboration !


Detector:
Size: 16 x 26 meters
Weight: 10,000 tons
TOF
TRD
HMPID
ITS
PMD
PHOS
Muon Arm
TPC
Korea:
- TOF
- TRD
- Computing
- Physics
Collaboration:
> 1000 Members
> 100 Institutes
> 30 countries
ALICE Set-up

# EMCAL support




‘Mini frame’
29 Nov 2007: Descent of the last big structure

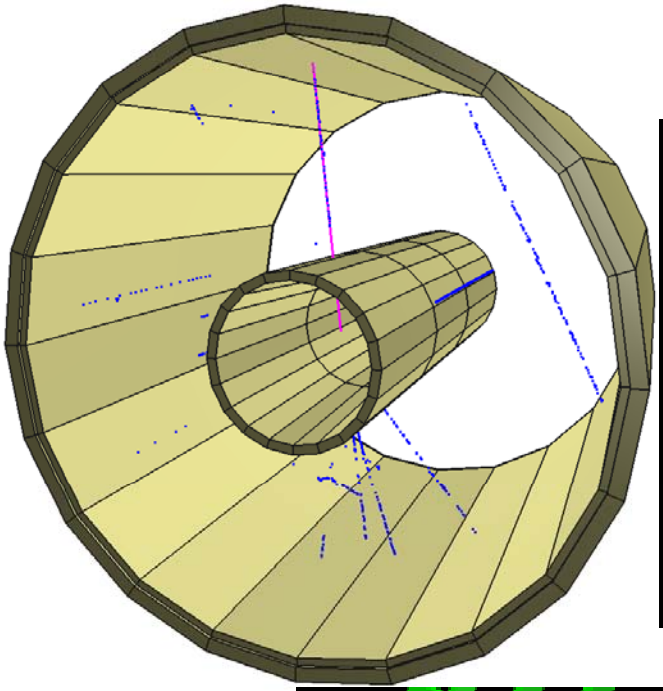
# Planning 2008

| PHASE | Detector | Start | Finish |
|---|---|---|---|
| PHASE 4 ✓ | V0-A/T0-A/TOF/L3 magnet test | 7.1.2008 | 17.2.2008 |
| ✓ | Cosmic Run II | 18.2.2008 | 9.3.2008 |
| ongoing | TOF/TRD/PHOS/PMD | 11.3.2008 | 4.5.2008 |
| | Cosmic Run III, | 5.5. 2008 | start of beam |
| | Mobile shielding, close vacuum | T0 – 6 weeks | T0 – 3 weeks |
| | Start of beam | T0 | |

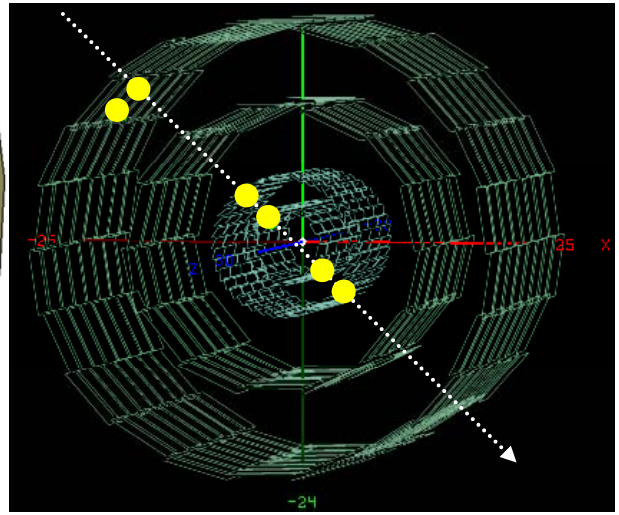
- Expected start-up configuration May 2008
  - **complete**: ITS, TPC, TOF, HMPID, muon arm, FMD, trigger dets (V0, T0,ZDC, Acorde),..
  - **partially complete**: PHOS(1/5), TRD (3/18), PMD (few/48), DAQ/HLT (20-30%),

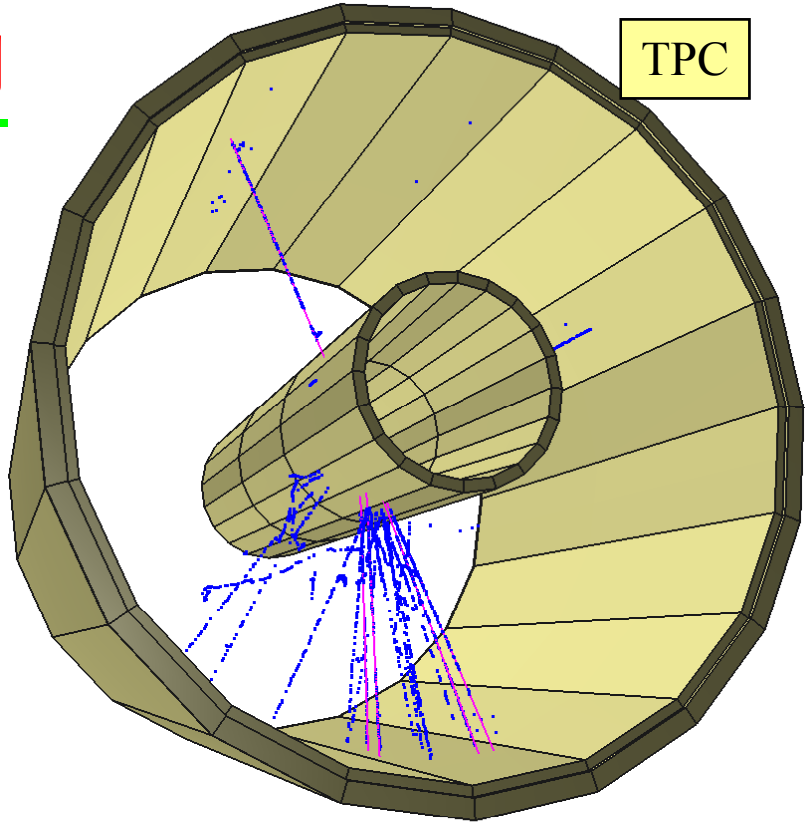
- Beyond 2008
  - ⇨ complete **DAQ/HLT** capacity (shifted from 2008 to 2009) in line with expected LHC running
  - ⇨ complete modular detectors: **PMD** (2008), **TRD (2009), PHOS** (2010), **EMCAL (2011)**

# Commissioning

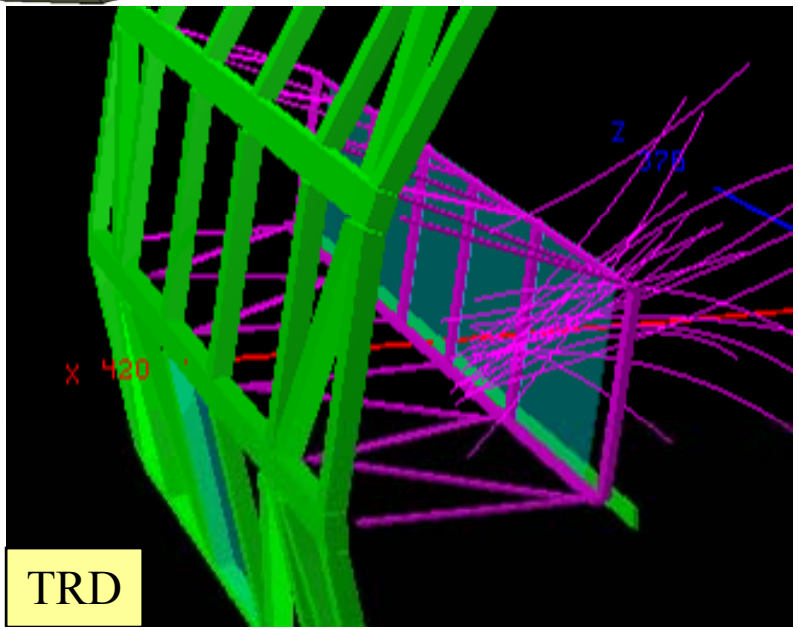


SDD + SPD

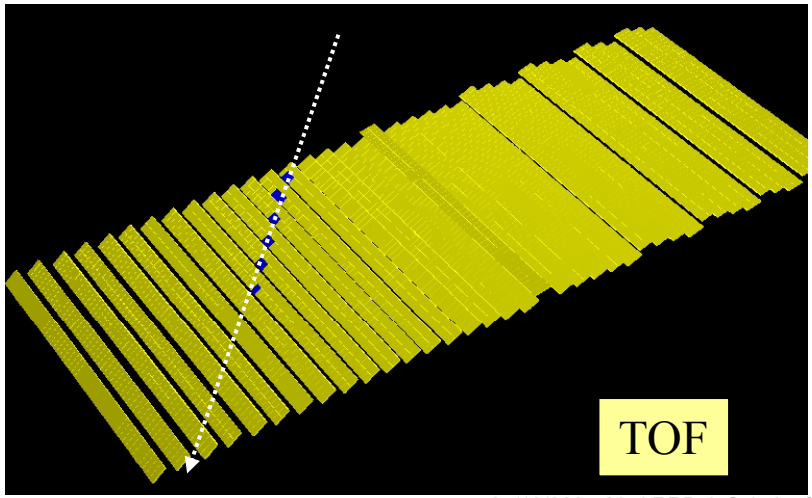




TPC



TRD

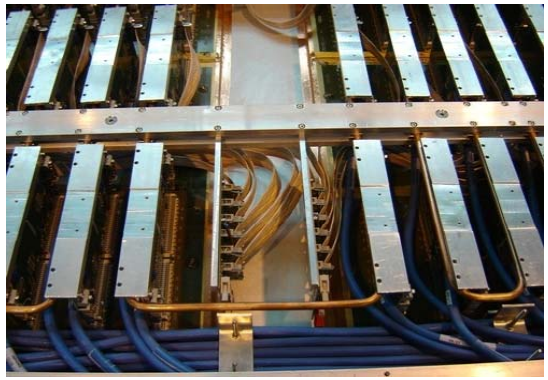


TOF

# Korean activity in ALICE

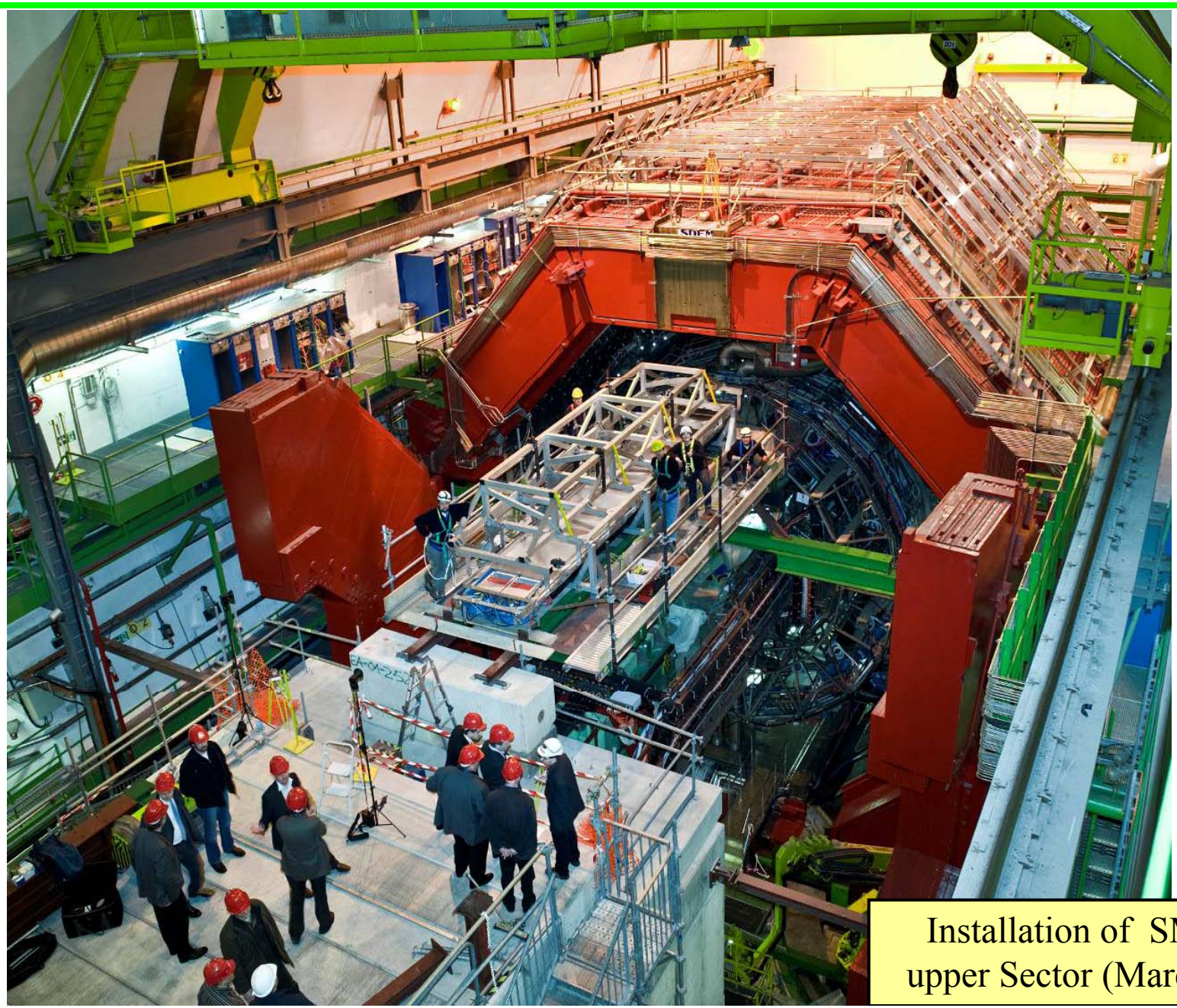
- Participating Groups:
  - ⇨ **Kangnung:**
    - ✪ TOF assembly & commissioning, physics
  - ⇨ **Sejong:**
    - ✪ Grid computing, physics
  - ⇨ **Kisti:**
    - ✪ ALICE Korea Tier-2
  - ⇨ **Yonsei:**
    - ✪ TRD assembly and commissioning, physics
  - ⇨ **Pusan:**
    - ✪ Physics

# Activities of TOF SuperModule Assembly @CERN



- Contribution of Korean TOF group
  - 2 persons (permanently @CERN)
  - 3 persons (short term visits)
- Status of assembly & installation (10 SMs done/9 months)
  - SM7 … SM16 (10 SMs) have been completed and moved to P2.
  - SM1 … SM15 have been installed @P2
  - SM17 & SM18 are under construction.
- Plan 2008
  - TOF Completion & installation : April 2008.
  - Commissioning and Maintenance

# TOF



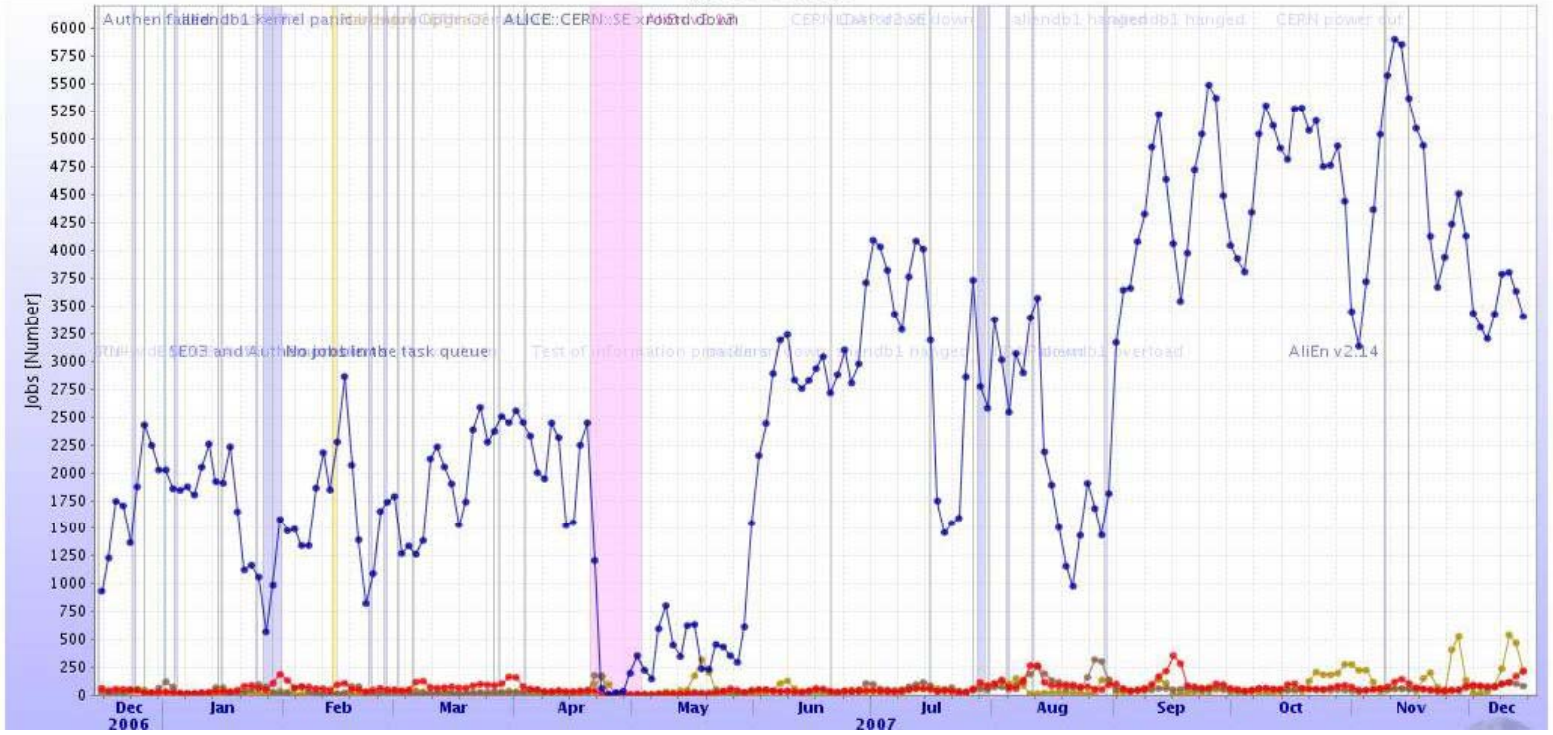
Installation of SM15 in the upper Sector (March 31,2008)

# Computing: Sejong Cluster

- Front end:
  - Intel Core2Duo, 2.4 GHZ
  - 2 Gbytes RAM
  - 500 Gbytes HDD
- Storage:
  - 1 Tbytes + 2 Tbytes
- Worknode: 64 PC's
  - Intel Pentium 4, 3.2 GHz
  - 2 Gbytes RAM
  - 250 Gbytes HDD
  - Fast ethernet

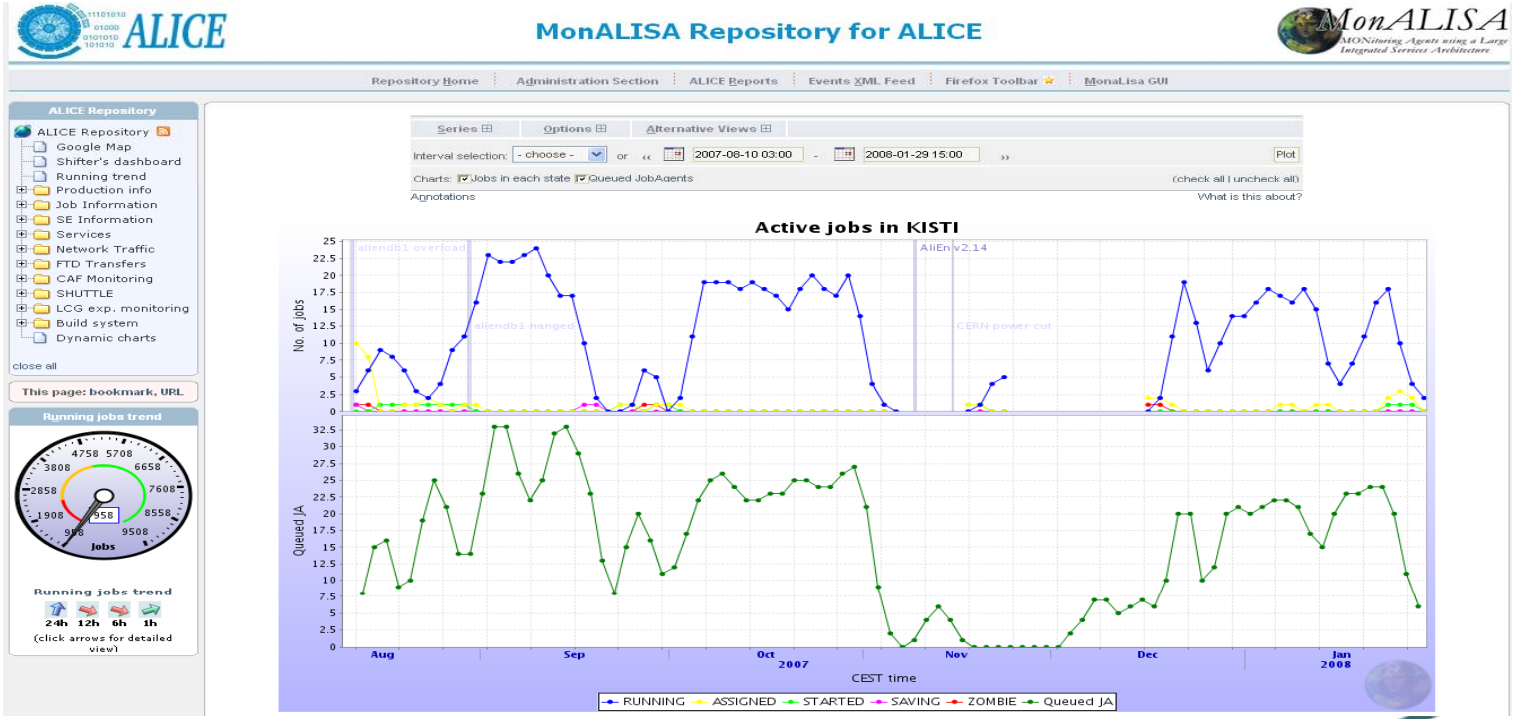
- Computing for **ALICE (GRID)** & **ALICE-Korea**
- 2007: pledged = 32 KSI; delivered > 60 KSI (200%)


Active jobs in Sejong
No. of jobs
Queued jobs
Dec 2006
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2007

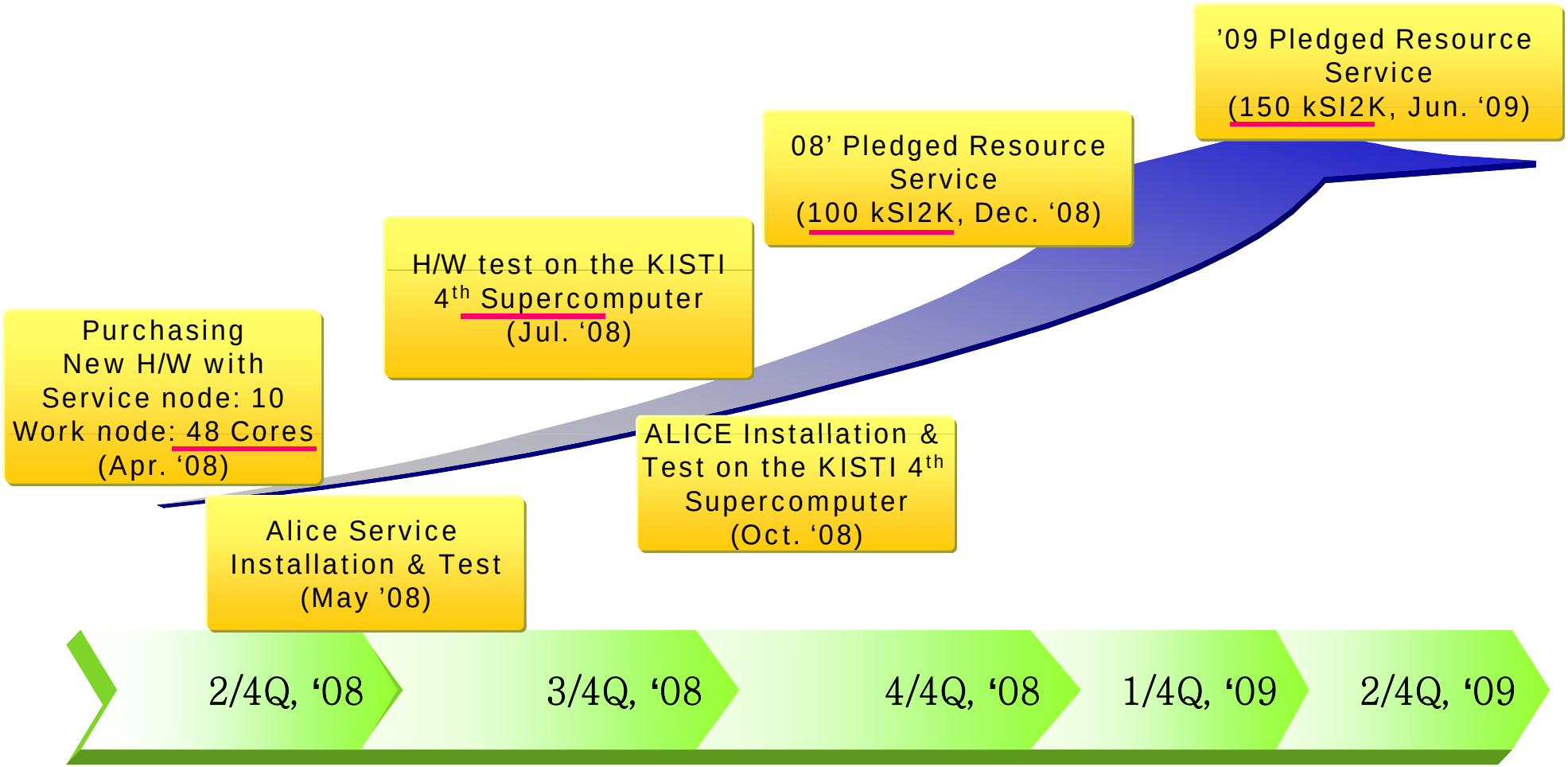

Jobs [Number]
No jobs in the task queue
AliEn v2.14
Dec 2006
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2007

# ’07 ALICE Computing at KISTI

- **Signed WLCG MoU for KISTI to serve as a CERN-approved ALICE Tier2 Center (’07.10)**
- **Hired additional staff members for ALICE Tier2 Operation, Currently in KISTI :**
  - Soonwook Hwang (WLCG CB Representative)
  - HangJin Chang (Manager of KISTI ALICE Tier2 Operation)
  - BeobKyun Kim (ALICE Management & Operation)
  - SangBae Park (ALICE Management & Operation)
- **ALICE Jobs coming into KISTI Tier2 Center (’07.07 ~ ’08.01)**



# ’08 Resource Plan



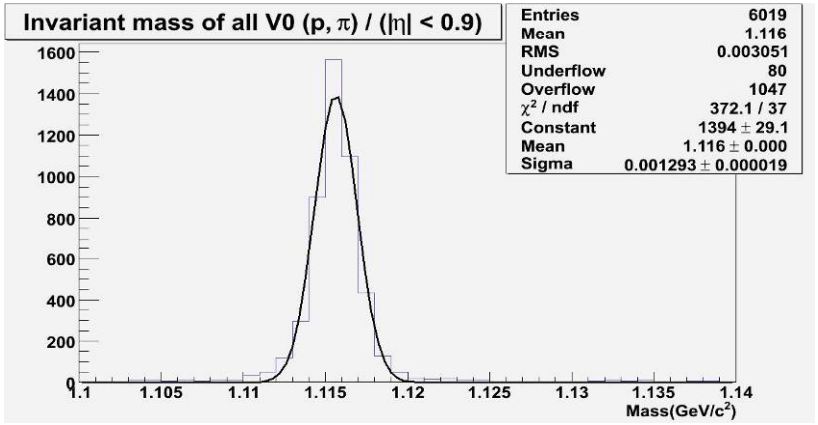
# Lambda polarization analysis

H.T.Jung, E.G.Kang, D.W.Kim, S.C.Lee,
**Kangnung** National University

- Basic properties of $\Lambda^0$

(1) $m$ =1,115.7 MeV/$c^2$, $c\tau$ = 7.89cm (PDG 2006)

(2) $\Lambda^0$ decays mainly(63.9%) into a pair of proton and pion inside the detector volume, producing a V0




- Analysis procedure

(1) Find V0

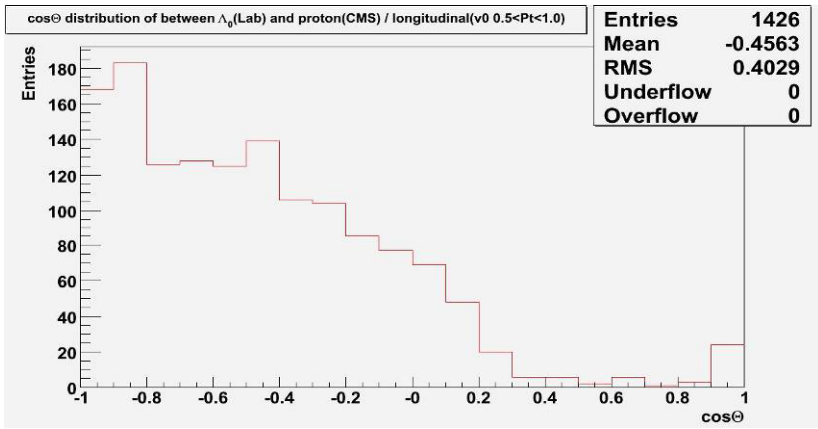
(2) Identify the two tracks from V0(p,$\pi$)

(3) Select $\Lambda^0$

(4) Study decay angle distribution

- longitudinal polarization

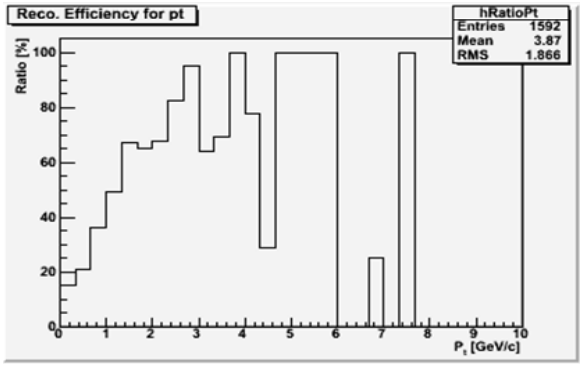
- transverse polarization

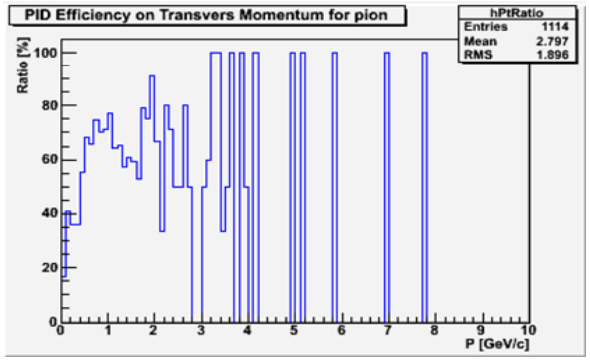


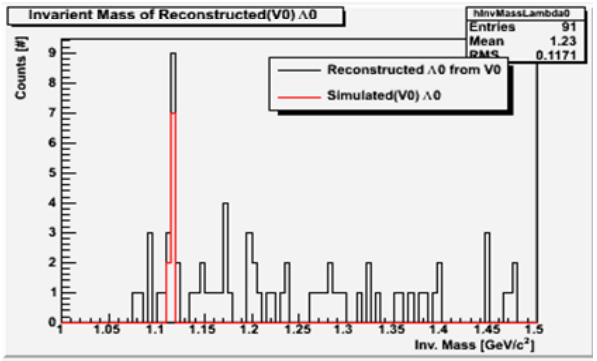

Seyong Kim's presentation in PWG2, October 2007

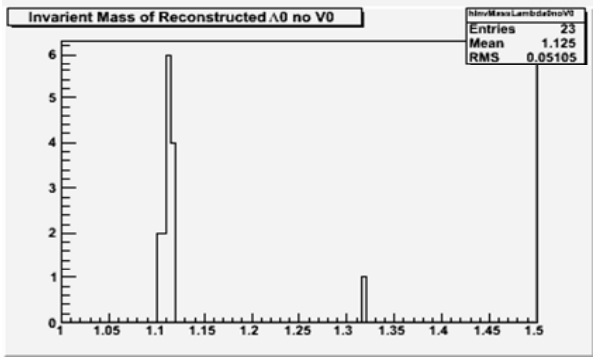
# Activity starting in Pusan

- AliRoot tutorial in Kangnung National University
  - Pythia, Geant3, Simulation, Reconstruction, ESD analisys
- AliRoot installation in HIPEx's Lab.
  - Installation
  - Some tests with 100 Events
    - Reconstruction Efficiency, PID Efficiency, V0 Selection Efficiency




  - Errors with more events -> to be solved

# Near term Plan in Pusan

- AliRoot framework in KISTI Supercomputer
  - 4'th SuperComputer
    - SUN Massively Parallel Processing
    - Rpeak : 286TFlops
    - node : 2,688  cpus : 21,504
  - Will be tested with Sun Cluster Testbed (8nodes, ~ 32 CPUs) : Apr. 2008
- $\Lambda_c^+$ Analysis @ p-p Simulation data : 2008
  - Simulation with Pythia
    - 5.5 TGeV p-p collision
  - Decay mode for Analysis
    - $pK^-\pi^+$ (B.R. 5.0 %) : three body decay
  - Invariant mass for 3 particles
- Heavy Ion collision Simulation : 2009
  - be Simulated by Hijing
    - 5.5 TGeV Pb-Pb collision
  - $\Lambda_c^+$ Analysis

# TRD construction (Yonsei)

Student : D. H. Lee
Location : GSI, Germany
( under the local guide by
Prof. Dr. P. BraunMunzinger )

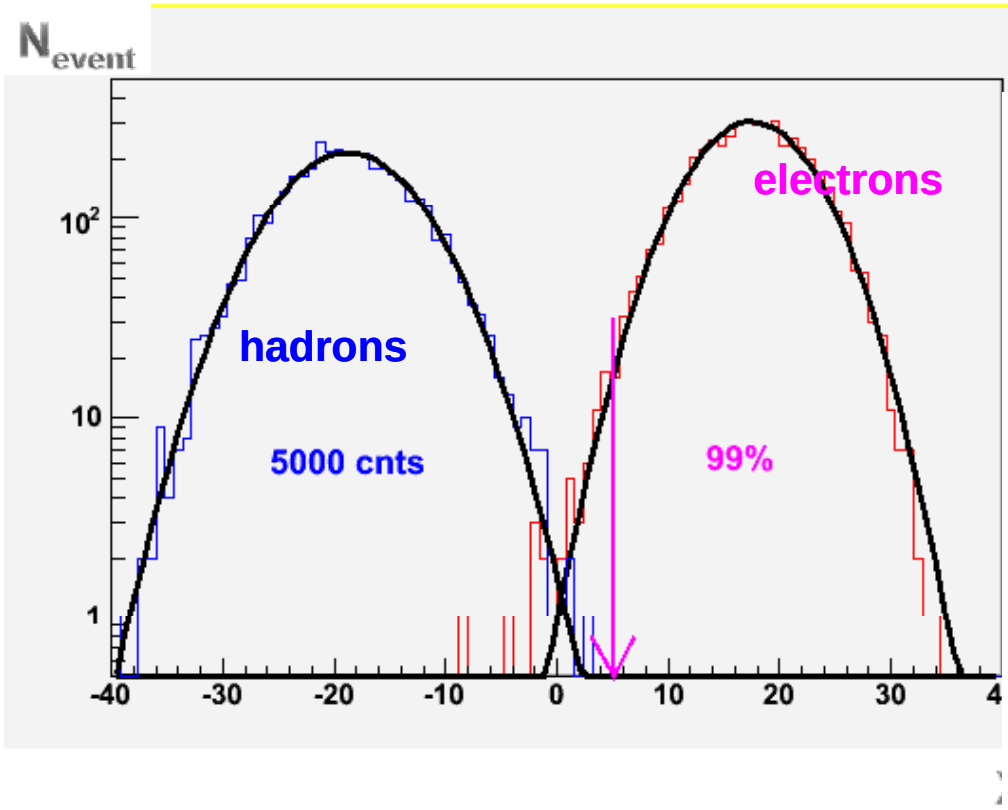
D.H. will participate in the
TRD production. Duration of his
stay will be determined
by the grant availability.

Right : D.H.'s photo
He is working on the TRD.

# Physics & Computing

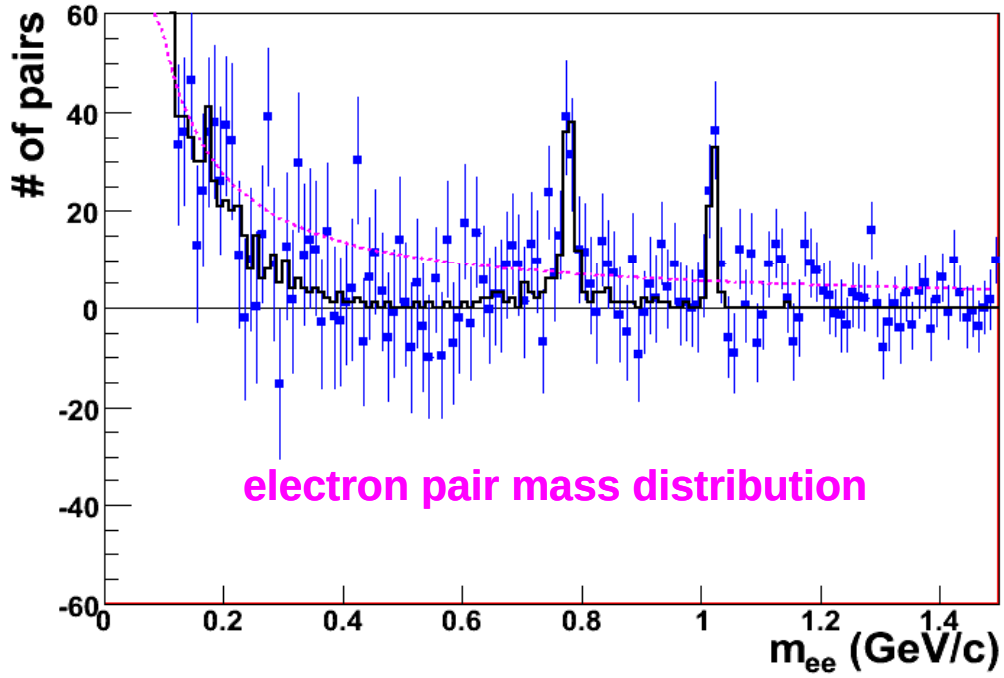
Student : B. K. Kim
Location : Seoul
( Prof. Kang & Prof. Kwon )

Improved algorithm for electron/hadron separation in the TRD




Student : B. S. Chang
Location : Seoul
( Prof. Kang & Prof. Kwon )

Photons via low mass electron pairs



# Common Fund, C&I Contributions 1997 - 2008

Unit: kCHF
Cutoff date: **08 April 2008**

*) Modified by MoU Addendum
**) Balance = Funds received - Funds due

| | Total contributiuons | | | | | Funds due | | Extra | |
|---|---|---|---|---|---|---|---|---|---|
| | Fee | Cash | C&I | InKind | Total | MoU | C&I | contrib. | Balance **) |
| CERN | 30.0 | 2,566.0 | 5.0 | 346.9 | 2,947.9 | 2,700.0 | 5.0 | 242.9 | |
| Czech Republic | 80.0 | 40.0 | 46.0 | | 166.0 | 120.0 | 32.0 | | 14.0 |
| Denmark | 40.0 | 80.0 | 49.0 | | 169.0 | 120.0 | 49.0 | | |
| Finland | 40.0 | 60.0 | 42.0 | | 142.0 | 100.0 | 42.0 | | |
| France CEA | 40.0 | 110.0 | 71.0 | | 221.0 | 150.0 | 71.0 | | |
| France IN2P3 | 125.0 | 1,024.7 | 347.0 | | 1,496.7 | 900.0 | 347.0 | 249.7 | 0.0 |
| Germany BMBF | 210.7 | 1,069.3 | 490.0 | | 1,770.0 | 1,280.0 | 490.0 | | |
| Germany GSI | 40.0 | 680.0 | 278.0 | | 998.0 | 720.0 | 278.0 | | |
| Greece | 47.5 | 77.5 | 5.0 | | 130.0 | 125.0 *) | 5.0 | | |
| Hungary | 45.0 | 45.0 | 37.0 | | 127.0 | 100.0 | 27.0 | | |
| Italy | 445.0 | 1,155.0 | 649.7 | | 2,249.7 | 1,600.0 | 649.0 | | 0.7 |
| Netherlands | 40.0 | 180.0 | 87.0 | | 307.0 | 220.0 | 87.0 | | |
| Norway | 85.0 | 55.0 | 66.0 | | 206.0 | 140.0 | 66.0 | | |
| Poland | 117.0 | 13.0 | | | 130.0 | 120.0 | 15.0 | | -5.0 |
| Slovak Republic | 90.0 | -6.4 | 36.0 | 16.4 | 136.0 | 100.0 | 36.0 | | |
| Spain/Cuba | | 45.0 | | | 45.0 | 45.0 | | | |
| Sweden | 45.0 | 255.0 | 124.0 | | 424.0 | 300.0 | 119.0 | | 5.0 |
| Switzerland | 5.0 | | | | 5.0 | 5.0 | | | |
| United Kingdom | 40.0 | 120.0 | 64.0 | | 224.0 | 160.0 | 64.0 | | |
| Armenia | 38.0 | | 8.3 | 4.8 | 51.0 | 40.0 | 11.0 | | |
| China | 23.0 | | | | 23.0 | 120.0 *) | 15.0 | | -112.0 |
| Croatia | 50.0 | 50.0 | 17.0 | | 117.0 | 100.0 *) | 17.0 | | |
| India | 120.0 | 80.0 | | 137.2 | 337.2 | 300.0 | 15.0 | | 22.2 |
| Japan | | 150.0 | | | 150.0 | 150.0 *) | | | |
| JINR | 40.0 | | 5.0 | 199.6 | 244.6 | 240.0 *) | 5.0 | | -0.4 |
| Korea, Rep. of | | 50.0 | | | 50.0 | 100.0 *) | | | -50.0 |
| Korea, Yonsei | | 17.0 | | | 17.0 | 50.0 | | | -33.0 |
| Mexico | 60.0 | | | | 60.0 | 100.0 *) | 10.0 | | -50.0 |
| Romania ISS | 40.0 | 5.0 | | | 45.0 | 40.0 *) | 5.0 | | |
| Romania NIPNE | 40.0 | 60.0 | 5.0 | | 105.0 | 100.0 | 5.0 | | |
| Russia | 85.0 | | | 930.7 | 1,015.7 | 1,300.0 | 10.0 | | -294.3 |
| Ukraine | 70.0 | | | | 70.0 | 100.0 | 47.0 | | -77.0 |
| South Africa | 25.0 | | | | 25.0 | 40.0 *) | 5.0 | | -20.0 |
| USA CalPoly | | 50.0 | | | 50.0 | 50.0 | | | |
| USA DOE | 30.0 | 225.0 | | | 255.0 | 265.0 *) | 5.0 | | -15.0 |
| USA (OSC) | | | | | | 40.0 | 5.0 | | -45.0 |
| USA (OSU) | 40.0 | | 9.0 | | 49.0 | 40.0 | 9.0 | | |
| *Interest* | 450.9 | | 10.5 | | 461.4 | | | | |
| *Totals* | 2,677.1 | 8,256.1 | 2,451.4 | 1,635.6 | 15,020.1 | 12,180.0 | 2,546.0 | 492.6 | -659.9 |

## Institute Fee:

**Kangnung/Sejong:**
50 k paid, 50 k in 2008

**Yonsei:** 17 k paid, 33 k in 2008/9

# M&O cat. A invoices/income 2002 - 2007

closing date: 15.04.08

**M&O A:**

**'02-'07: paid**

(CHF)

| Year | | 2002 - 2006 | | | | 2007 | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Country | Invoiced | Received | In-kind | Due | Invoiced | Received | In-kind | Due |
| MS | CERN | 890,326 | 890,326 | | | 478,300 | 478,300 | | |
| | Czech Republic | 127,357 | 127,357 | | | 76,300 | 76,300 | | |
| | Denmark | 51,944 | 51,894 | | 50 | 41,600 | 42,000 | | -400 |
| | Finland | 64,755 | 64,755 | | | 48,500 | 48,500 | | |
| | France CEA | 85,434 | 85,434 | | | 55,500 | 55,500 | | |
| | France IN2P3 | 605,395 | 605,395 | | | 374,300 | 374,300 | | |
| | Germany BMBF | 403,455 | 403,455 | | | 221,800 | 221,800 | | |
| | Germany GSI | 275,199 | 275,199 | | | 124,800 | 124,800 | | |
| | Greece | 38,695 | 38,695 | | | 41,600 | 42,000 | | -400 |
| | Hungary | 38,442 | 38,442 | | | 20,800 | 20,800 | | |
| | Italy | 1,527,628 | 1,527,628 | | | 811,000 | 811,000 | | |
| | Netherlands | 104,587 | 104,587 | | | 76,300 | 76,300 | | |
| | Norway | 126,058 | 126,058 | | | 104,000 | 104,000 | | |
| | Poland | 234,843 | 234,843 | | | 110,900 | 110,901 | | -1 |
| | Slovak Republic | 165,165 | 165,165 | | | 110,900 | 110,900 | | |
| | Spain/Cuba | | | | | 41,600 | 41,600 | | |
| | Sweden | 66,135 | 66,135 | | | 34,700 | 34,700 | | |
| | United Kingdom | 80,325 | 80,325 | | | 48,500 | 48,500 | | |
| *MS Total* | | 4,885,743 | 4,885,693 | | 50 | 2,821,400 | 2,822,201 | | -801 |
| NMS | Armenia | 34,243 | 34,243 | | | 27,400 | | | 27,400 |
| | Brazil | | | | | | | | |
| | China | 44,400 | | | 44,400 | 73,100 | | | 73,100 |
| | Croatia | 47,163 | 47,163 | | | 18,300 | | | 18,300 |
| | India | 353,468 | 353,468 | | | 244,000 | 244,000 | | |
| | Japan | | | | | 45,200 | 45,200 | | |
| | JINR | 248,974 | 68,080 | | 180,894 | 45,700 | | 226,594 | -180,894 |
| | Mexico | 91,603 | 71,303 | | 20,300 | 54,800 | 54,800 | | |
| | Republic of Korea | 25,400 | 25,400 | | | 54,800 | 54,800 | | |
| | Romania | 75,048 | 75,048 | | | 91,400 | 91,400 | | |
| | Russia | 577,594 | 577,594 | | | 427,000 | 185,350 | | 241,650 |
| | South Africa | 42,970 | 42,970 | | | 27,400 | | | 27,400 |
| | Ukraine | 68,492 | 40,820 | 28,000 | -328 | 27,400 | 18,800 | | 8,600 |
| | USA DOE | 17,504 | 17,509 | | -5 | 118,000 | 118,000 | | |
| | USA NSF | 65,507 | 65,609 | | -102 | 27,200 | 27,200 | | |
| *NMS Total* | | 1,692,366 | 1,419,207 | 28,000 | 245,159 | 1,281,700 | 839,550 | 226,594 | 215,556 |
| *Grand Total* | | 6,578,109 | 6,304,900 | 28,000 | 245,209 | 4,103,100 | 3,661,751 | 226,594 | 214,755 |
| *Percentage collected:* | | | 96.3 | % | | | 94.8 | % | |

# Invoices/Contributions 2008

Unit: CHF
Closing date: 15 April 2008

**M&O A:**

**2008 invoice: 76 k CHF**

| Year | | 2008 | | | |
|---|---|---|---|---|---|
| | Country | Invoiced | Received | In-kind | Due |
| MS | CERN | 518,200 | | | 518,200 |
| | Czech Republic | 97,200 | 20,000 | | 77,200 |
| | Denmark | 40,500 | | | 40,500 |
| | Finland | 48,600 | 48,600 | | |
| | France CEA | 56,700 | | | 56,700 |
| | France IN2P3 | 453,400 | | | 453,400 |
| | Germany BMBF | 259,100 | 259,100 | | |
| | Germany GSI | 145,700 | 145,700 | | |
| | Greece | 56,700 | | | 56,700 |
| | Hungary | 24,300 | | | 24,300 |
| | Italy | 955,400 | 394,558 | | 560,842 |
| | Netherlands | 89,100 | 89,100 | | |
| | Norway | 145,700 | | | 145,700 |
| | Poland | 113,400 | | | 113,400 |
| | Slovak Republic | 105,300 | | | 105,300 |
| | Spain/Cuba | 56,700 | 56,700 | | |
| | Sweden | 48,600 | 48,600 | | |
| | United Kingdom | 89,100 | | | 89,100 |
| *MS Total* | | 3,303,700 | 1,062,358 | | 2,241,342 |
| NMS | Armenia | 25,300 | | | 25,300 |
| | Brazil | 50,700 | | | 50,700 |
| | China | 101,300 | | | 101,300 |
| | Croatia | 50,700 | | | 50,700 |
| | India | 323,900 | | | 323,900 |
| | Japan | 74,900 | 31,225 | | 43,675 |
| | JINR | 76,000 | | 72,378 | 3,622 |
| | Mexico | 152,000 | | | 152,000 |
| | Republic of Korea | 76,000 | | | 76,000 |
| | Romania | 139,400 | | | 139,400 |
| | Russia | 502,900 | | | 502,900 |
| | South Africa | 38,000 | | | 38,000 |
| | Ukraine | 38,000 | | | 38,000 |
| | USA DOE | 250,700 | | | 250,700 |
| | USA NSF | 50,100 | 50,100 | | |
| *NMS Total* | | 1,949,900 | 81,325 | 72,378 | 1,796,197 |
| *Grand Total* | | 5,253,600 | 1,143,683 | 72,378 | 4,037,539 |

| | |
|---|---|
| *Percentage collected:* | 23.1 % |

# 2009 Preliminary Budget and sharing by Funding Agency

## M&O A:

**2009 forecast: 78.9 k CHF**

unit: kCHF

Preliminary estimate for 2009 M&O 'A' based on:

- sharing determined Sept. 2007
- estimates updated in 2007

Both will be updated during 2008

| | Scientists | M&O Cat A without energy | Energy | Energy billed to FA | Bill in kCHF |
|---|---|---|---|---|---|
| CERN | 64 | 549.4 | 292.6 | | 549.4 |
| Czech Republic | 12 | 103.0 | 54.9 | | 103.0 |
| Denmark | 5 | 42.9 | 22.9 | | 42.9 |
| Finland | 6 | 51.5 | 27.4 | | 51.5 |
| France CEA | 7 | 60.1 | 32.0 | | 60.1 |
| France IN2P3 | 56 | 480.7 | 256.0 | | 480.7 |
| Germany BMBF | 32 | 274.7 | 146.3 | | 274.7 |
| Germany GSI | 18 | 154.5 | 82.3 | | 154.5 |
| Greece | 7 | 60.1 | 32.0 | | 60.1 |
| Hungary | 3 | 25.8 | 13.7 | | 25.8 |
| Italy | 118 | 1,012.9 | 539.4 | | 1,012.9 |
| Netherlands | 11 | 94.4 | 50.3 | | 94.4 |
| Norway | 18 | 154.5 | 82.3 | | 154.5 |
| Poland | 14 | 120.2 | 64.0 | | 120.2 |
| Slovak Republic | 13 | 111.6 | 59.4 | | 111.6 |
| Spain/Cuba | 7 | 60.1 | 32.0 | | 60.1 |
| Sweden | 6 | 51.5 | 27.4 | | 51.5 |
| United Kingdom | 11 | 94.4 | 50.3 | | 94.4 |
| Armenia | 2 | 17.2 | 9.1 | 9.1 | 26.3 |
| Brazil | 4 | 34.3 | 18.3 | 18.3 | 52.6 |
| China | 8 | 68.7 | 36.6 | 36.6 | 105.2 |
| Croatia | 4 | 34.3 | 18.3 | 18.3 | 52.6 |
| India | 26 | 223.2 | 118.9 | 113.4 | 336.5 |
| Japan | 6 | 51.5 | 27.4 | 26.3 | 77.8 |
| JINR | 6 | 51.5 | 27.4 | 27.4 | 78.9 |
| Mexico | 12 | 103.0 | 54.9 | 54.9 | 157.9 |
| Republic of Korea | 6 | 51.5 | 27.4 | 27.4 | 78.9 |
| Romania | 11 | 94.4 | 50.3 | 50.3 | 144.7 |
| Russia | 44 | 377.7 | 201.1 | 146.6 | 524.3 |
| South Africa | 3 | 25.8 | 13.7 | 13.7 | 39.5 |
| Ukraine | 3 | 25.8 | 13.7 | 13.7 | 39.5 |
| USA DOE | 20 | 171.7 | 91.4 | 88.8 | 260.4 |
| USA NSF | 4 | 34.3 | 18.3 | 17.8 | 52.1 |
| Total | 567 | 4,867.0 | 2,592.0 | 662.5 | 5,529.5 |

# Summary

- ALICE detector
  - ⇨ installation essentially finished, & commissioning progressing

- Korean participation in ALICE
  - ⇨ very successful and satisfactory collaboration with **Kangnung & Sejong & KISTI**
    - ✪ important contribution to TOF project (R&D, participation in assembly & commissioning)
    - ✪ GRID computing in Korea well integrated & efficient
    - ✪ physics preparations ongoing
  - ⇨ collaboration with new groups **Yonsei & Pusan** has started smoothly
    - ✪ TRD assembly, physics analysis and computing

Looking forward to Physics !