

The DELPHI detector tracker

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Forward Chamber A

Barrel Muon Chambers

Forward Chamber B

- Forward RICH
- Forward EM Calorimeter
- Forward Hadron Calorimeter
- Forward Hadronscope

Forward Muon Chamber

- Barrel Hadron Calorimeter
- Scintillators
- Superconducting Coil
- High Density Projection Chamber

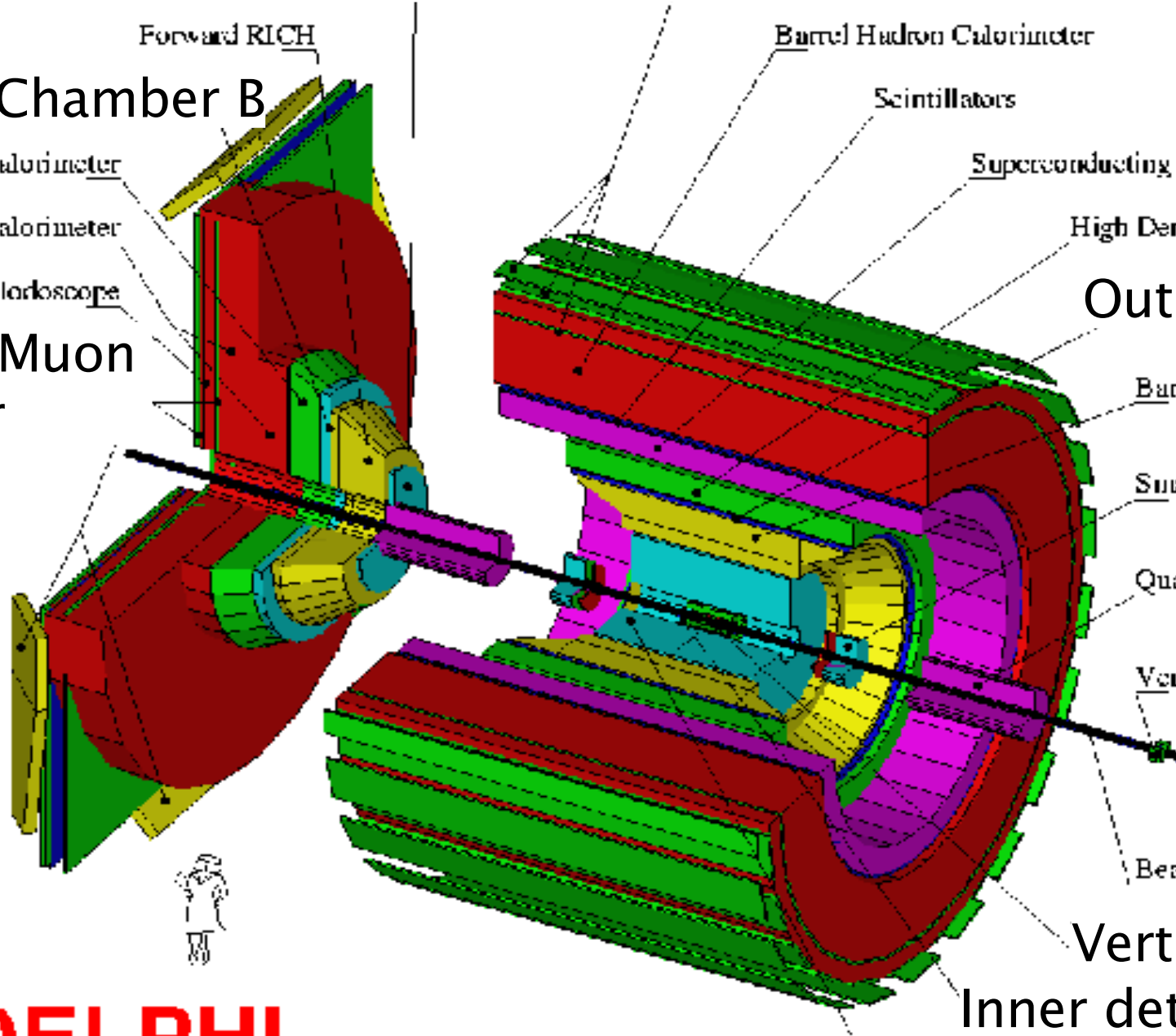
Outer detector

- Barrel RICH
- Small Angle Tile Calorimeter
- Quadrupole
- Very Small Angle Trigger

Vertex detector

Inner detector

Time projection chamber



Tracking detectors

- Barrel
 - Vertex detector
 - Inner detector
 - Time Projection Chambers
 - Outer detector
- Forward
 - Forward Chamber A
 - Forward Chamber B
 - Very Forward Tracker
 - Muon chambers

Vertex detector

- Requirements:
 - 2π coverage in the ϕ direction
 - 25 μm pitch
 - Fast gating (< 180 ns)
- Silicon strips chosen. 1280 diode strips per cell. 38400 strips per cylinder. 3 cylinders.

We agree with this choice...

Inner detector

- Requirements:
 - Provide trigger information in $r\phi$ and rz with granularity of about 1 deg
 - Measure precisely track segment near the interaction point ($< 100 \mu\text{m}$ per point)
 - Jet track separation $< 1\text{mm}$ accuracy
- CO_2 gas detector chosen (with space for extra strips in an upgrade).
- Trigger layer uses straw tubes, jet chamber is a drift chamber
- CO_2 gas: low diffusion coefficient; safe; cheap
- Our proposal: Silicon is better...

Time Projection Chamber

- Requirements:
 - 250 μm resolution in $r\phi$
 - 3D information on tracks of charged particles
 - Particle identification from determination of energy loss (dE/dx)
- Gas detector, Ar-CH₄
- Total volume of 14 m³
- Water cooled: temperature regulated to 0.3 deg in order to ensure a constant gain along wires