

# On the way to PANDA ToF

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*PID ToF Session, GSI, March 3<sup>rd</sup> 2009*  
*XXVIII. PANDA Collaboration Meeting*

Present Status

Required Information

Design Optimisation

Conclusions

## Time-of-Flight detectors in PANDA

- Forward ToF wall
- Side ToF in dipole gap
- Barrel ToF
- *No forward endcap ToF*
- *No start detector available*
- Relative timing with min. 2 tracks

## Design options for barrel ToF

- Scintillator barrel (St. Petersburg)
- RPC pads (ITEP, Moscow, ALICE)
- RPC strips (IHEP, Protvino, HARP)

## Detector Requirements

- Minimum time resolution
  - path length, detector resolution
- Required separation power
- Evaluation of relative timing

## Implications on PANDA

- Interaction with EMC
- Minimum material budget
- realistic material budget with r/o cables etc

## Physics Impact

- Momentum window
- Rejection levels
- Improved global PID
- Channels requiring ToF

## Criteria for ToF decision

- Physics case
- Control on conversions
- Budget/groups

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ToF Task Force including Detector, Software and Physics

## Parameters to optimize

- Material budget as low as possible
- Number of r/o channels
- Coordinates, projections, orientations
- Readout on both ends?

## Relations to other detector systems

- Close proximity to EMC
- Minimize conversion effects
- Mounting inside barrel DIRC
- Readout: NINO ASIC and TDC
- Is analog information required?

Unified geometry

- Time-of-Flight detectors in PANDA are needed but open questions have to be addressed
- **Task force to work out decision**
  - Software group: Model detector response, separation power
  - Detector groups: Design parameters
  - Physics groups: Identify channels for which Barrel ToF is vital
  - Quantify physics potential
- **Goal:** Decision in June at next PANDA CM in Torino June 15-19, Otherwise in Jülich, September 7-11
- **Next steps after decision:**
  - Optimisation of geometry
  - Readout design
  - Material budget