

HADES2

High Acceptance Di-Electron Spectrometer
at GSI-SIS (Darmstadt, Germany)

(C + C), (Ca + Ca), (Ni + Ni), (Au + Au), (p + p), (p + Nucleus), @ 1÷2 GeV/amu
(π + p) (π + Nucleus) @ 2 GeV/c

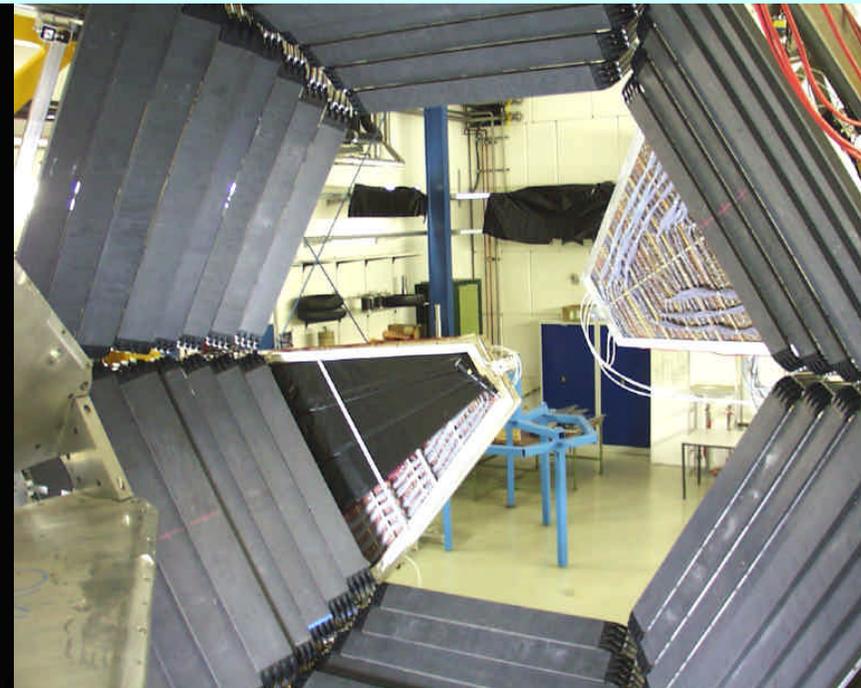
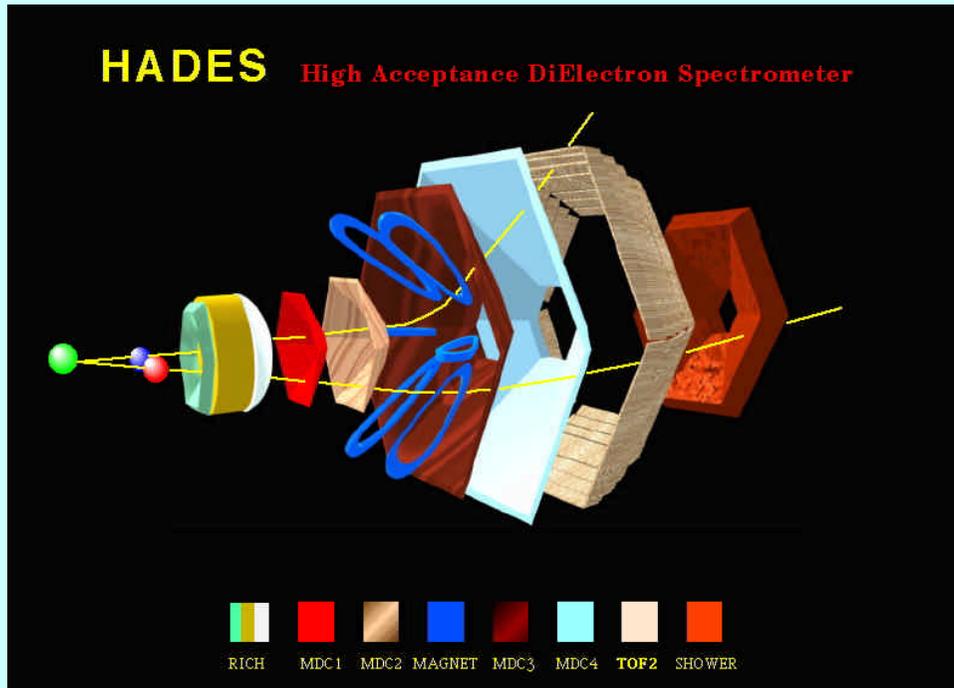
≈120 people from 20 institutions in 9 countries, 15 from Italy

IOP Bratislava, INFN-LNS Catania, LPC Clermont-Ferrand, INP Cracow, IOP Cracow, GSI Darmstadt, FZR
Rossendorf, JINR Dubna, IFK Frankfurt, PI Giessen, PI Heidelberg, INFN Milano, MEPhI Moscow, ITEP
Moscow, TU Munchen, DNS Nicosia, IN2P3 Orsay, NPI Rez, DFP Santiago de Compostela, IFC Valencia

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Physics goals

- di-electron spectrometry of dense nuclear matter at 1÷2 GeV/amu
- dropping mass of vector mesons in dense matter
- partial chiral symmetry restoration



- a hadron-blind RICH for triggering on electron candidates
- 2 Mini Drift Chambers (MDC) + a toroidal magnet + 2 MDC for tracking @ x 150 μ m
- a Time Of Flight wall made of scintillating rods at $44^\circ \div 88^\circ$, t 230ps, x 3cm
- a TOFINO+SHOWER detector at $13^\circ \div 45^\circ$ for lepton/hadron discrimination

The TOF detector, built by INFN-LNS and INFN-MI, in collaboration with INP Rez, IOP Bratislava, GSI Darmstadt, PI Giessen

What to measure and how?

Dilepton pairs are a wonderful probe of the hot and dense region of the collision, but they are rare and difficult to spot among the copious amount of hadrons produced in a collision. Reactions at as low as 1-2 AGeV energy should reduce the number of open decay channels, thus providing a cleaner signal. What is needed is a dilepton spectrometer that combines large acceptance, high resolution (both in momentum and invariant mass), high rate capability.

In other words, what is needed is HADES.

The first physics run is scheduled at GSI in November 2001 with a (C+C) system at 1.7 AGeV. Then in 2002 HADES will start collecting e+e- pairs from a wide set of colliding nuclear systems, from (p+p) up to (Au+Au). Also planned is the direct production of vector mesons exploiting a newly developed pion beam facility (π +Pb), as well as the study of the e+e- channels in elementary reactions like (π^+ + p) and (π^- + p).

Counts

100

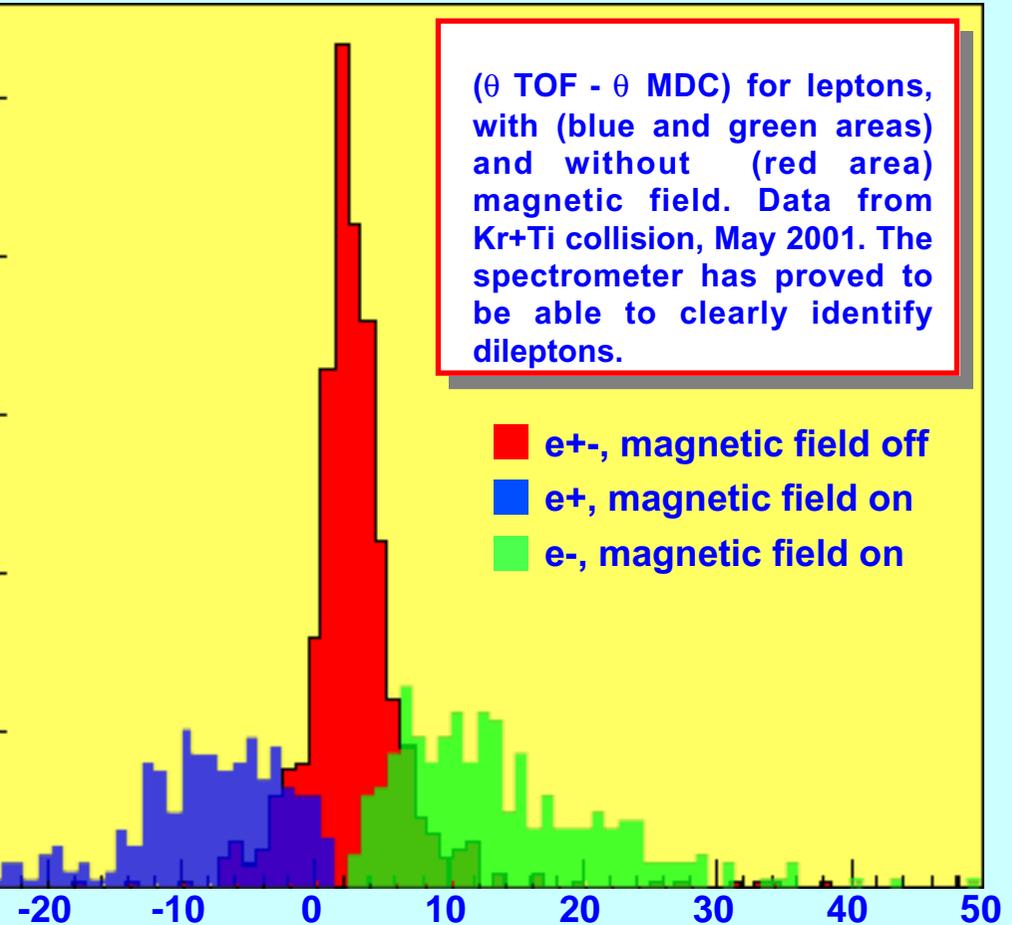
80

60

40

20

0



$\Delta\theta$ (TOF-MDC)