

NUCLEAR PHYSICS IN SLOVAKIA

BRATISLAVA

COMENIUS UNIVERSITY

HEAVY IONS: detectors, spectrometry (Dubna, GSI)
ATLAS, DELPHI, NA-50, ... (CERN)
QCD, quark-gluon plasma, structure of nucleons & nuclei (*theory*)
COSMOGENIC RADIONUCLIDES & low activities
NEUTRINO (double β decay) (*theory*)

SLOVAK TECHNICAL UNIVERSITY

MÖSSBAUER
POSITRON ANNIHILATION SPECTROSCOPY
ION BEAM TRANSPORT, ion implantation
RADIATION ECOLOGY

INSTITUTE OF PHYSICS, SLOVAK ACADEMY OF SCIENCES

QUANTUM HYDRODYNAMICS & EXOTIC NUCLEI
STATISTICAL (PREEQ.) REACTIONS
QCD, formfactors, quark-gluon plasma
POSITRON ANNIHILATION & solid-state physics
(HADES EXPERIMENT) (GSI)

CYCLOTRON CENTRE of SLOVAK REPUBLIC

DIAGNOSTIC & THERAPEUTIC ISOTOPES, PET
PRESENT STATE: PET, 18 MeV cyclotron (installed)
NEAR FUTURE: 72 MeV cyclotron

KOŠICE

ŠAFÁRIK UNIVERSITY

INST. OF EXPER. PHYSICS, SLOVAK ACAD. SCI.

COSMIC RADIATION

RELATIVISTIC NUCLEAR PHYSICS (emulsions)

CERN: ATLAS, ALICE, WA97, NA57, LHC, ...

DESY: H1

FERMILAB: CDF, D0

PHASE TRANSITIONS in relativistic colls.

ŽILINA UNIVERSITY

2 isolated high-energy theoreticians

APPLIED

NUCLEAR POWER PLANTS & RELATED Jaslovské Bohunice,
Mochovce, Trnava

HEALTH PROTECTION Bratislava

INSTITUTE OF PHYSICS, BRATISLAVA:

- **Asymmetric nuclear matter within relativistic mean-field**
 - Parametrization of nucl. matter properties (DBHF)
 $\epsilon = \epsilon(\rho) \quad \rho = 0 - 1 \text{ fm}^{-3}$
population of particles (n, p, e, μ , Σ , Λ ...) as function of ρ
nuclear matter & charge distributions in selected nuclei
 - Algorithms to compress, process & visualize multi-dimensional data
 - DUBNA: ternary fission, fusion-fission & SHE, dissipation in HIC
 - (MSU) HIC up to Fermi energy (*EURISOL DS*)
- **Statistical (preeq.) models**
 - Nucleon radiative capture & γ emission $E^* \leq 40 \text{ MeV}$
 - Cluster formation and emission $E^* \leq 100 \text{ MeV}$
 - Cross sections for therapeutic & diagnostic isotopes
 - ECR ions sources & ion beam (hexapole ...) design
 - (GSI Darmstadt - HADES time-of-flight wall etc.)
- **Positron annihilation**
 - Solid-state properties (free volume) in polymers studied by positron annihilation
- **HIC, quark-gluon plasma etc.**
- **Nucleon- and light-particle formfactors (\leftarrow QCD)**

NEUTRON GENERATOR NOT IN OPERATION

(the last experiment 3–4 years ago)

SLOVAK TECHNICAL UNIVERSITY, BRATISLAVA:

V-d-G 900 keV