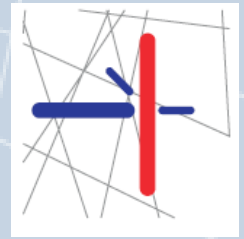




CANAM
Center of Accelerators and Nuclear Analytical Methods



Meeting of Scientific Advisory Committee 2015

Center of Accelerators and Nuclear Analytical Methods

canam.ujf.cas.cz

Laboratory of Cyclotron and Fast Neutron Generators (LC & FNG)

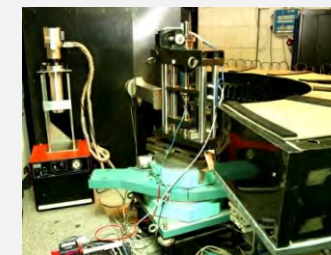
Operating the isochronous
cyclotron U-120M

Laboratory of Tandetron (LT)

Operating an accelerator
Tandetron 4130 MC

Neutron Physics Laboratory (NPL)

Providing facilities at the
reactor LVR-15



NPI major Czech institution in nuclear physics field

**~ 275 employees
(216 FTE)** **~ 80 scientists
(57 FTE)** **~ 30 PhD students**
22 postdocs

annual budget 182.5 mil CZK (6.6 MEUR)
(50% CAS, 50% targeted support)

CANAM - (FTE relates only to infrastructure)

**~ 91 persons
(48 FTE)** **~ 30 scientists
(10 FTE)** **~ 7 PhD students**
4 postdocs

annual budget 57.7 mil CZK (2.1 MEUR)
(31% CAS, 69% targeted support)

evaluation of NPI CAS is ongoing for 2010 – 2014 period

operation and administration of research infrastructures is concerned

physics panel

chemistry panel

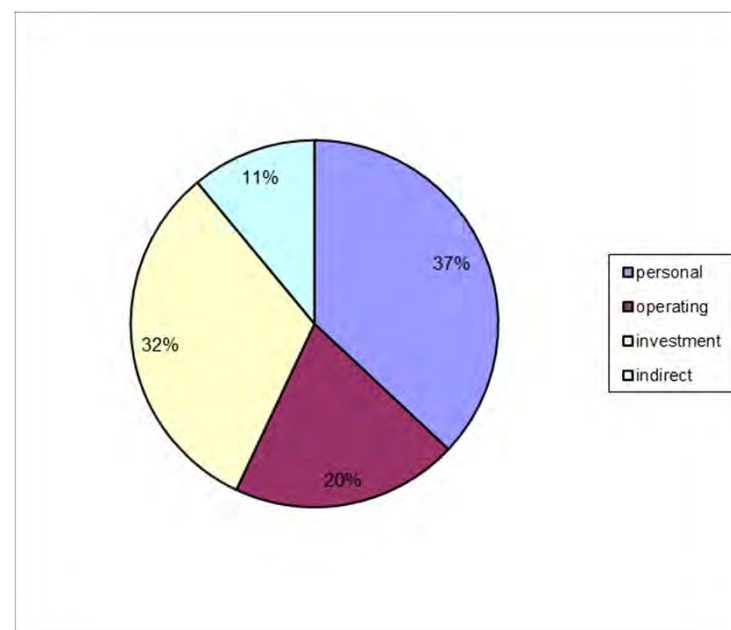


MEYS Program Projects of the large infrastructures for R&D

33 projects financed / approved by the Czech
Government
CANAM financed from 2012

Finances for CANAM 2015

	kCZK	(k€)
MEYS	40 000	(1 480)
NPI+ASCR	17 740	(660)
Total	57 740	(2 140)



MEYS performed a comprehensive evaluation of research infrastructures of the Czech Republic

International Evaluation Committee + Scientific Boards for research areas

evaluation carried out in 2 stages

stage 1 Form A focused on general criteria

stage 2 Form B detailed data (60 pages + 29 annexes) - 3 expert reviewers
Form C user questionnaire - 5 institutions addressed

interview with the Scientific Board for research area

stage 1 **119 proposals submitted**
 58 passed successfully

stage 2 **A1 Highest priority $\approx 27\%$ – 17 RIs**
 A2 High priority $\approx 39\%$ – 25 RIs
 A3 Medium priority $\approx 13\%$ – 8 RIs
 A4 Low priority $\approx 13\%$ – 8 RIs

42 RIs graded A1 and A2:
Social Sciences and Humanities – 6
Environmental Sciences – 5
Physical Sciences – 17
Energy – 5
Biomedicine – 7
ICT / e-Infrastructures – 2

CANAM

graded A2

recommended to be financed for 2016 – 2022 period

- operational costs funded by the MEYS
- investment costs - European Structural and Investment Funds



W.1 Physical Sciences

Center of Accelerators and Nuclear Analytical Methods

Acronym:
CANAM

Hosting institution:
Nuclear Physics Institute,
Academy of Sciences of the Czech Republic

Responsible person:
DOBES Jan
dobes@ujf.cas.cz

Website:
canam.ujf.cas.cz

Background description


The CANAM operates several different types of accelerators and neutron facilities, which are used in a wide range of scientific and technological disciplines. The ions are prepared at the isochronous cyclotron accelerator U-120M and at the electrostatic linear tandem 4130M accelerator. The facilities for studies with thermal neutrons are installed at the irradiation channels of the LVR-15 research reactor operated by the Řež Research Center. Fast neutrons are obtained from production targets at the cyclotron U-120M. The possibilities and scope in combination with different techniques using the ion and neutron beams (which can be implemented in synergic combination in the CANAM laboratories) are unique, even at the international level. The production, modification and complex characterization methods of CANAM are offered with employment for basic and applied studies in various R&D fields such as physics, materials sciences, chemistry, biology, biomedicine, energetics, microelectronics, environmental sciences, archaeology, cultural heritage, etc.

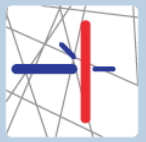
Future development

Permanent effort is devoted to developing, upgrading and modernizing the CANAM laboratories. At present, the most important enlargement is the purchase of the new TR-24 cyclotron, which substantially increases the possibilities in the research of radionuclide production, with applications mainly in medicine and life sciences, and in fast neutron studies, with an impact on the development of future fusion and fusion technologies. Other significant developmental step is considered, namely the purchase of an Accelerator Mass Spectrometry (AMS) system, presently not available in the Czech Republic.

Socio-economic impact

Both ion and neutron beams are important for their performance in various targeted applications, which are important not only for the scientific community, but also for the commercial sector, as the development of new materials and technologies, nanostructure synthesis, ion beam micromachining, radiation hardness of electronic elements, and nuclear data for fusion and advanced fusion systems. Cooperation between CANAM and the commercial sector concentrates not only on solving common R&D projects and tasks, but also on providing services at the CANAM facilities and expertise.





SAC: A strategic plan 2017-2022 is timely needed

self-reflection on the existing capabilities

the most important ion and neutron sources and accompanied techniques in the CR
importance for - basic nuclear physics research
- application techniques and methods of nuclear physics

uniqueness

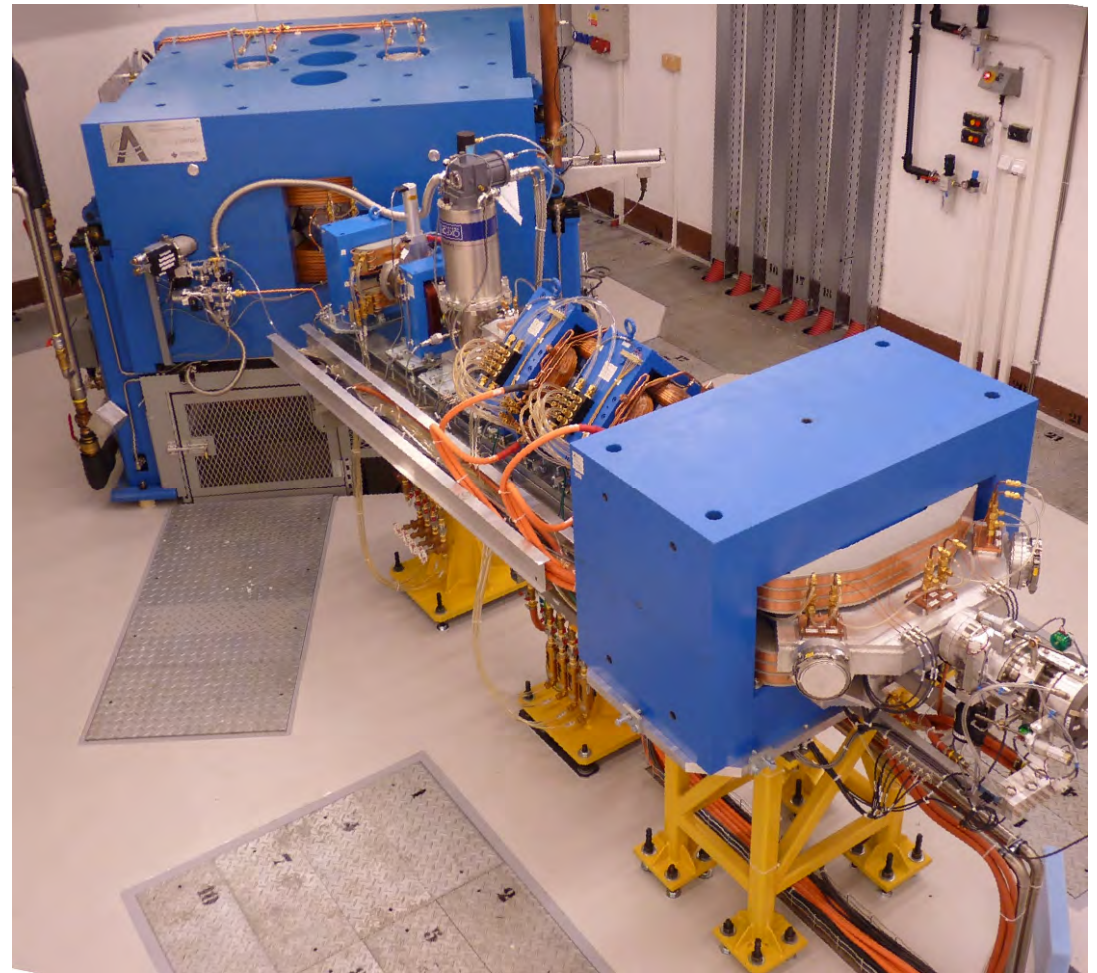
multidisciplinarity - 22 scientific disciplines in 2014

potential future capabilities

- the purchase of the new TR24 cyclotron

Cyclotron TR24

investment 220 mil. CZK (8 MEUR)
CAS, MEYS, NPI



evaluation of current and future stakeholder's requirements -

CAS Strategy AV21 - directly in 3 research programs

National priorities for oriented research, experimental development and innovations' - in 4 priority areas

SWOT analysis

implementation plan

uniqueness

combination of three CANAM laboratories

some of the techniques - high power fast neutron generators

- medium ion (C,N,O,Si) ion microbeam

- neutron depth profiling

- high-resolution neutron diffraction experiments

European networks

European Consortium on Nuclear Data

European Nuclear Science and Applications Research

European Research Infrastructures for Nuclear Data Applications

Integrated Infrastructure Initiative for Neutron Scattering and Muon Spectroscopy

Users

Czech users (from 36 institutions)

foreign groups and researchers (from 119 institutions)

marketing

40 presentations

outreach

**popular presentations and publications
open days**

proportion of its own research and research made in cooperation with external users

own research – up to 45% of the distributed beamtime

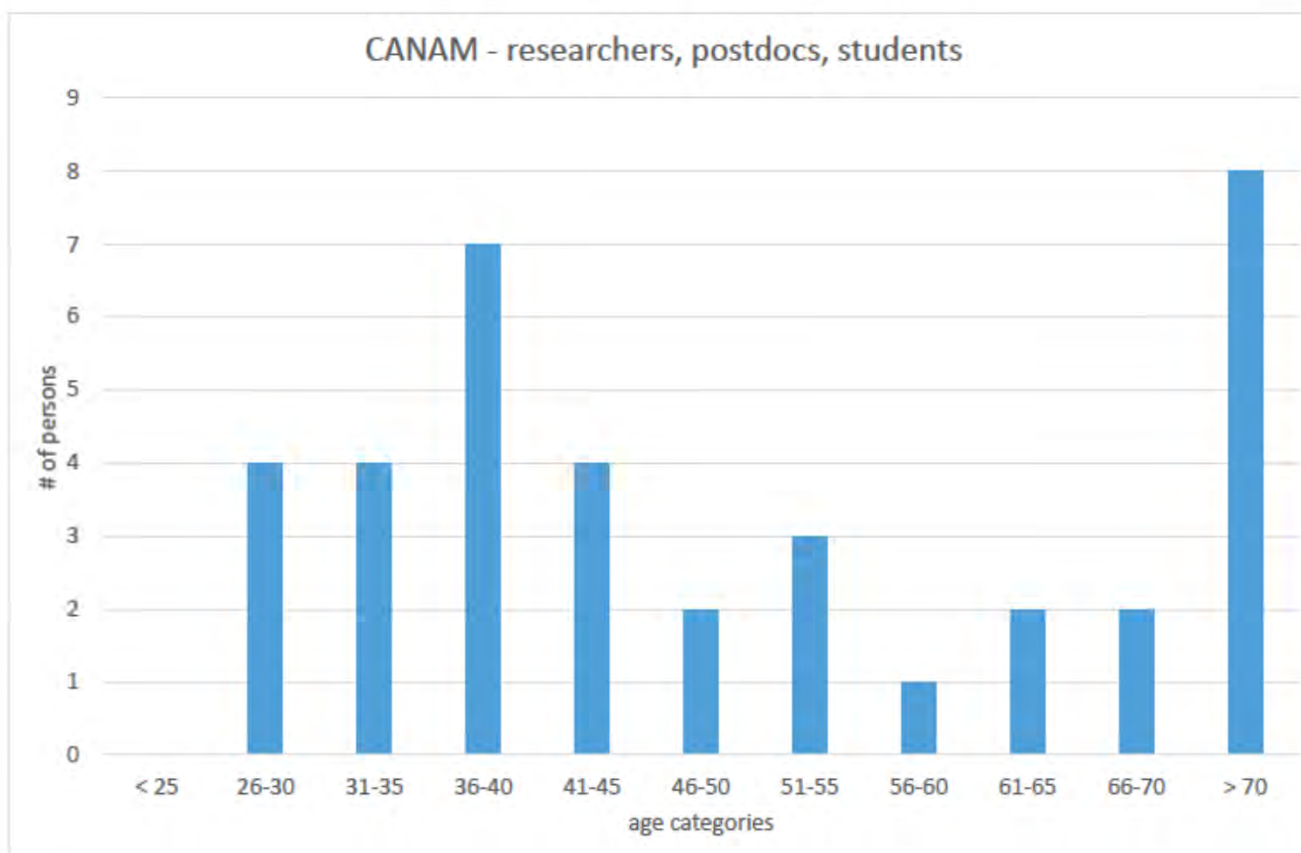
open access – at least 40% of the distributed beamtime

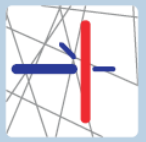
commercial users -max. 15 %

own strategic research

research of the CANAM scientific staff

age structure





criteria for evaluation of the proposals

two independent referees

proposals graded from A+ to D (from 10 to 1)

>8 → the beam time is allocated preferentially

4-8 → the beam time allocation is done by IR

2-4 → the beam time allocation is done by a coordinator of the laboratory

< 2 → the proposal is refused

feedback

users asked for feedback, not much response

TR24 cyclotron

implementation of a new ion beam line with external chopping system

high-power neutron targets

high-power targets for production of novel radionuclides

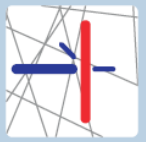
positron lifetime spectroscopy, high resolution mass spectrometry, and neutron imaging

Accelerator Mass Spectrometry (AMS) using the 1 MV accelerator planned
presently AMS not available in the CR

extend capabilities for low level determination of long-lived radionuclides



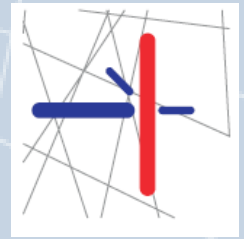
EU SF project, est. budget 200 mil. CZK (7.3 MEUR)



- **successfully passed evaluation**
- **infrastructure recognition and support for 2016 - 2022**
- **important financial aspects**
- **developments - TR-24, AMS**
- **impact on scientific research and collaboration**
- **responsibilities and commitments**
- **significant role of Scientific Expert Panels and Scientific Advisory Committee**



CANAM
Center of Accelerators and Nuclear Analytical Methods



Thank you for your attention

Presented by Jan Dobeš
main coordinator of the CANAM project