Heavy Ion Laboratory; Status and plans for future

Krzysztof Rusek

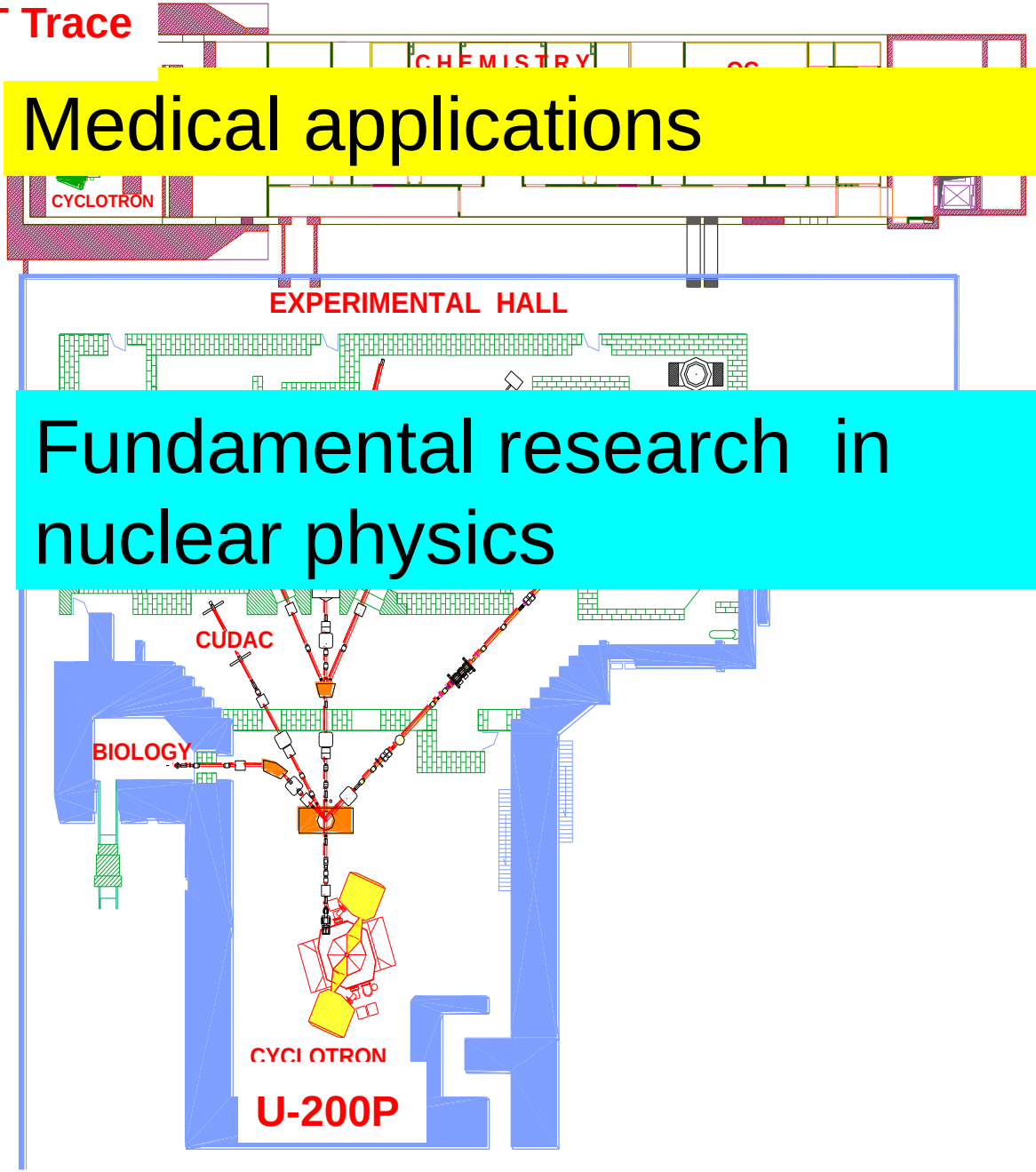
HIL

Heavy Ion Laboratory, University of Warsaw :

- National nuclear physics laboratory open for external users
- Involved in teaching
- developing medical applications

HIL

GE PET Trace



Medical applications

Fundamental research in nuclear physics

User Facility: ~ 100 users/year (~3300 h/y)

Staff: ~ 80

Two cyclotrons:

- U-200P heavy-ion cyclotron, up to 10 MeV*A, two ECR ion sources
- GE PET Trace, high intensity p/d cyclotron (16/8 MeV)

Subjects

- Coulomb excitations (K. Wrzosek-Lipska, P. Napiorkowski)
- Life time measurements
- K-isomers (J. Perkowski)
- Chirality (E. Grodner)
- Coulomb barrier distributions (A. Trzcinska)
- Transfer reactions (N. Keeley)
- Biology - surviving of irrediated cells (U. Kazmierczak)
- Atomic clusters, nanodosimetry
- New radiopharmaceuticals (J. Choinski)
- Commercial production of radiopharmaceuticals

Collaborations

Consortium ENSAR2

funded by European Union

from March 2016

Teaching

- National and international workshops for undergrad. and graduate
- Bachelors, Masters and PhD students from Univ. of Warsaw, Warsaw Univ.of Technology, Silesian Univ., National Centre for Nuclear Research (~ 10/year)

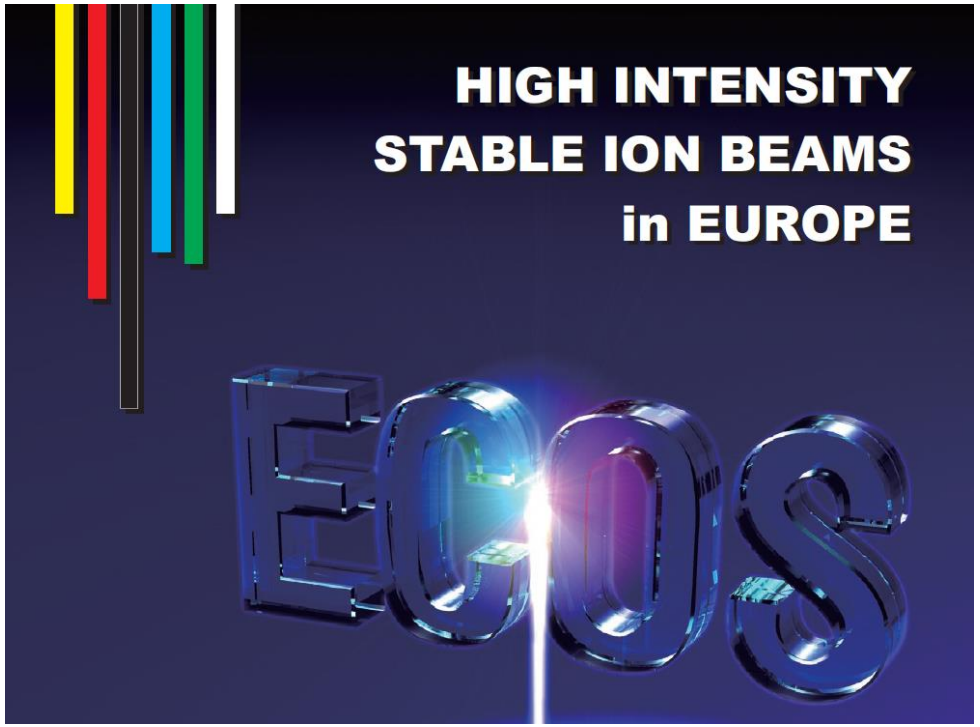
Development

- 2011 – EAGLE array
- 2012 – Radiopharmaceutical Centre
- 2014 – ECR ion source
- 2018 – HF generators
- 2019-2027 HIL@ECOS

HIL@ECOS – extension of HIL for the ECOS initiative

NuPECC: Upgrade of existing stable beam facilities is needed in order to obtain higher intensity beams (10^{12} pps).

NuPECC report, July 2007



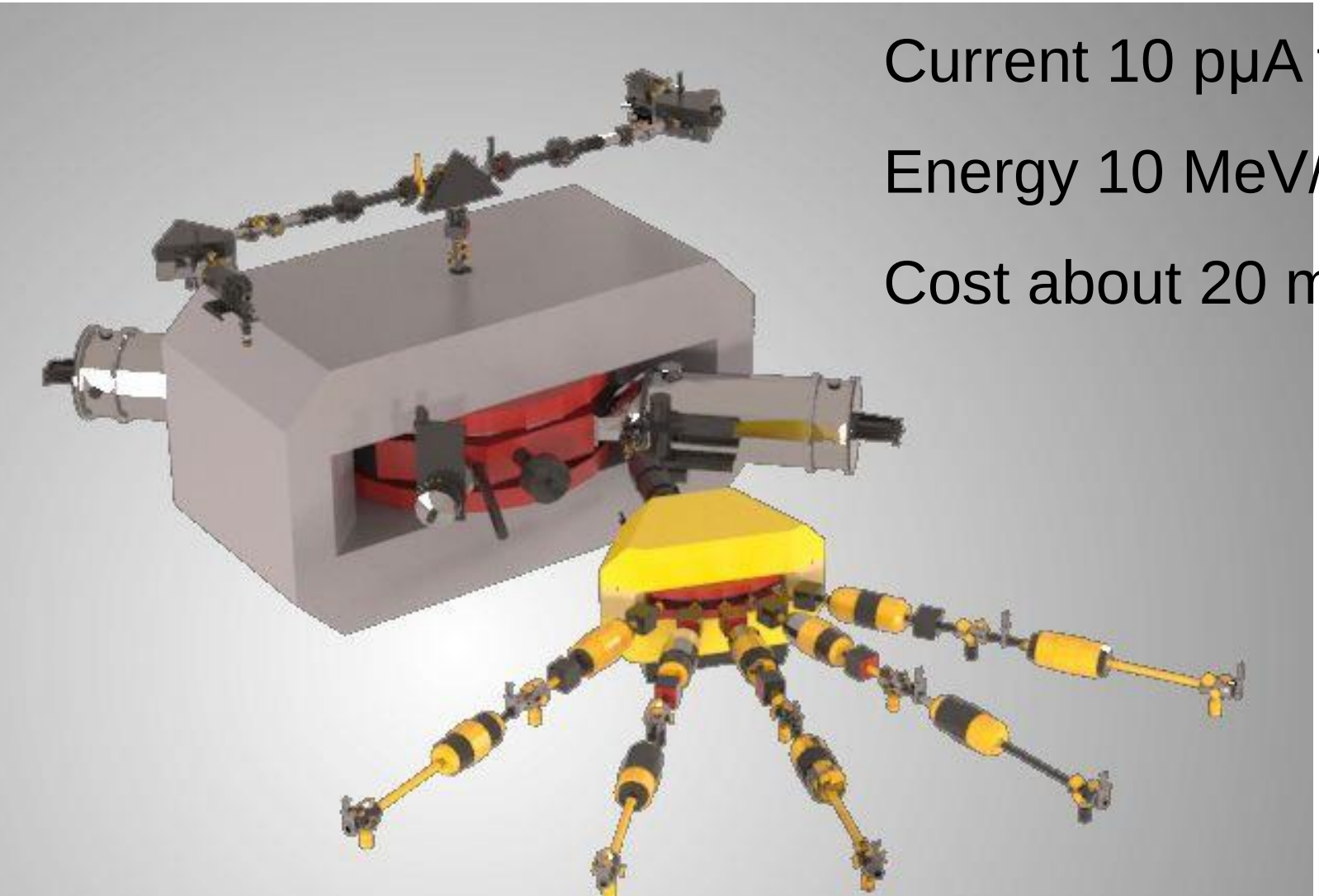
HIL New cyclotron, e.g. DC-280

Beams from ^{4}He to ^{209}Bi

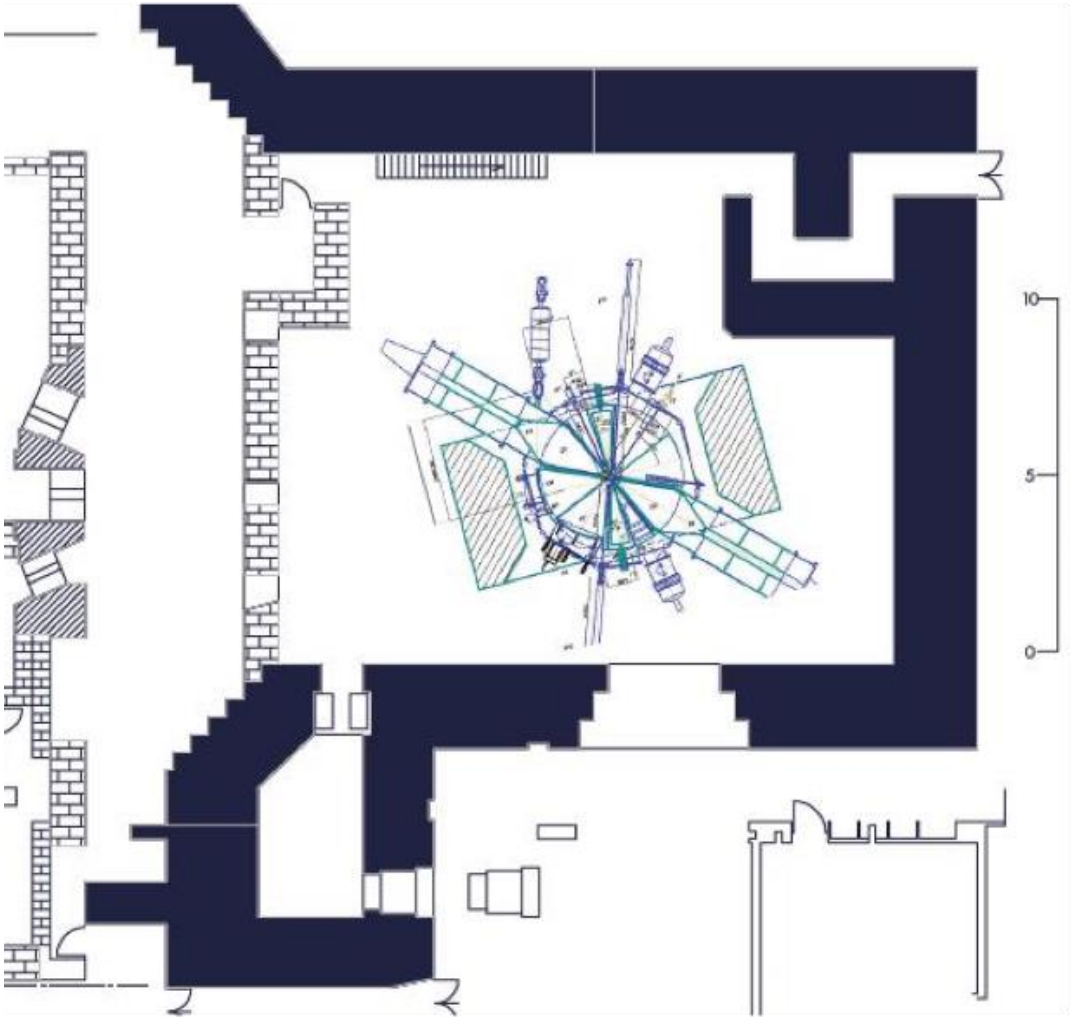
Current 10 pμA for A=50

Energy 10 MeV/A

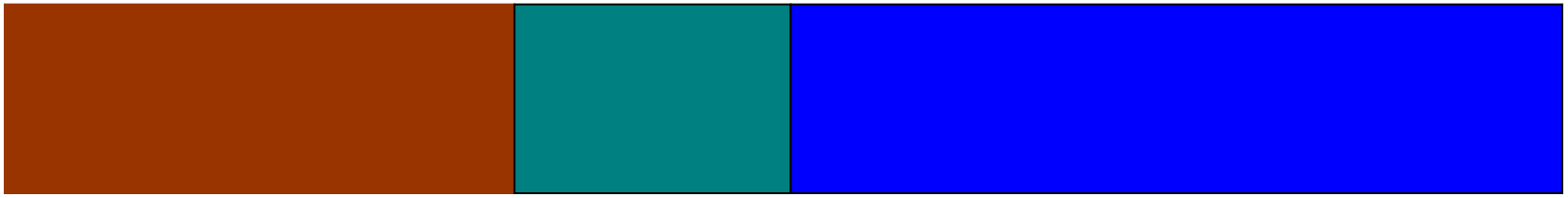
Cost about 20 mln USD



Replacement of U-200P



Timetable



2019 2022 2027

Preparatory phase **tender** **civil construction**

New opportunities

- Properties of SHE
- Chemistry of SHE
- Materials physics
- New medical radioisotopes
- Nuclear astrophysics

HIL@ECOS

extension of HIL for the ECOS initiative

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