# New physics program, new accelerators, new proposals

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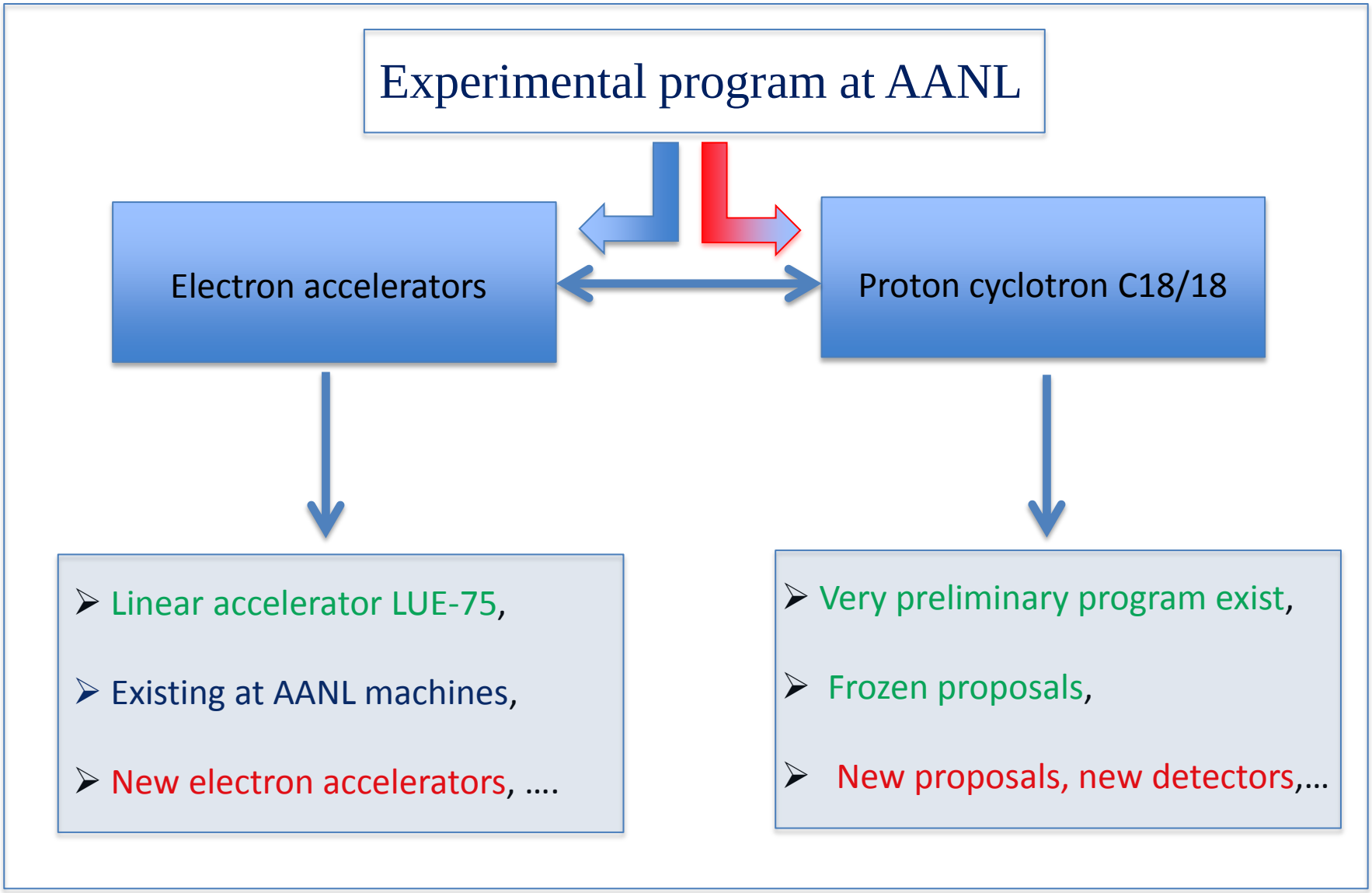
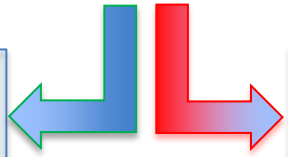
# Main directions



# Electron accelerators

## Electron linear accelerator LUE-75

- Physics short program exist:
  Dubna – Yerevan collaboration;
  Mu2e experiment, calibration of CsI crystals,
- AANL –YSU cooperation;
  study of nuclear reactions,
- Experiment in nuclear physics;
  financed by Science Committee,
- Experiments in nuclear physics;
  AANL EPD different groups,
- Czech (Brno University) – YSU-AANL; study of nuclear reactions.



- Extend the physics program,
- Applied physics ,
- Upgrade of separate elements, parts of the accelerator, transfer line,
- New measuring devices,
- Automatization.

# Electron accelerators

Existing at AANL machines ???

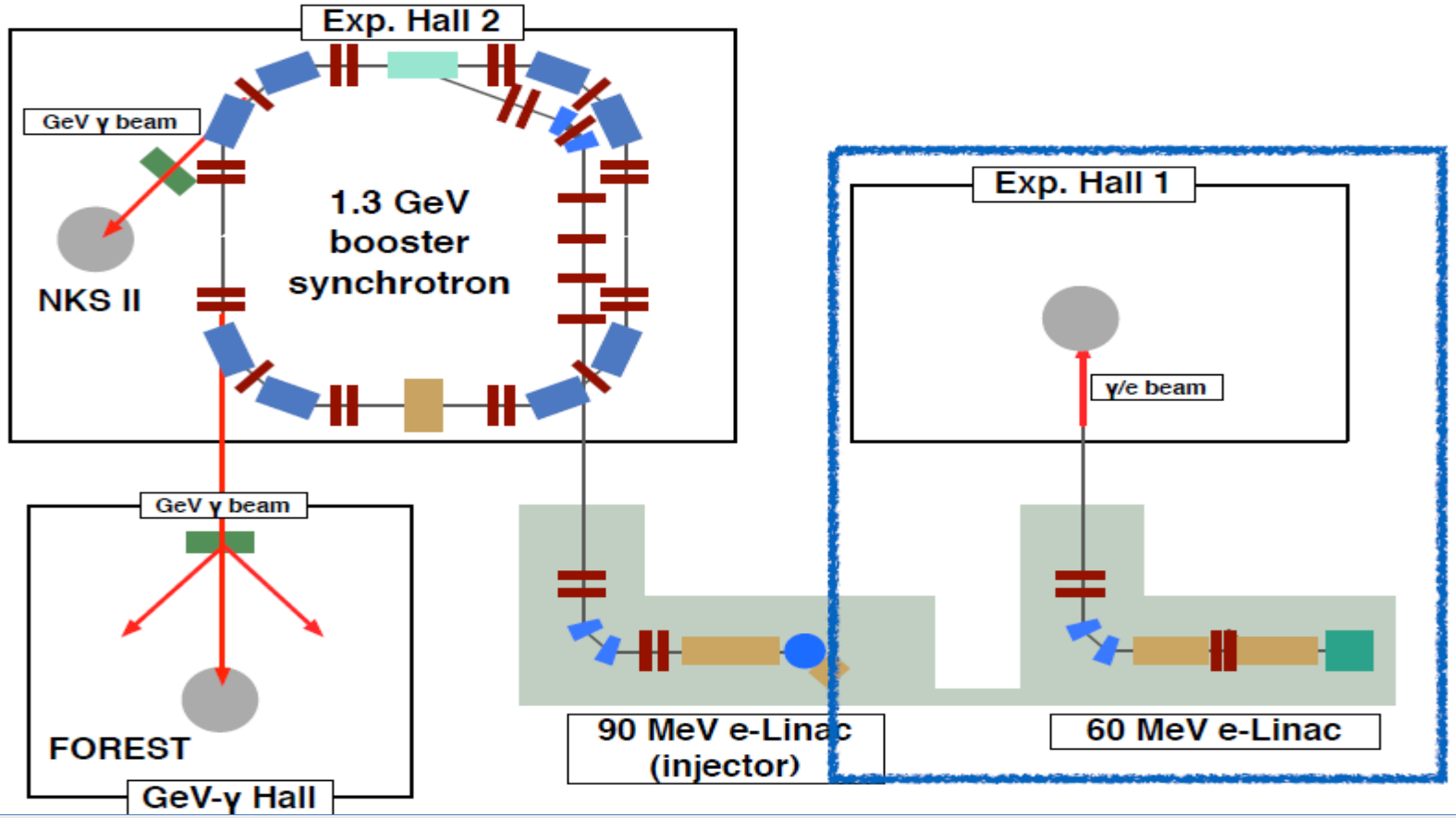
- Microtron MT-25:
  Seminar-presentation;
  Visit to “Microtron”;
  Proposal presentation.

- LUE -20:
  Visit to “LUE-20” building;
  next ???

# Electron accelerators

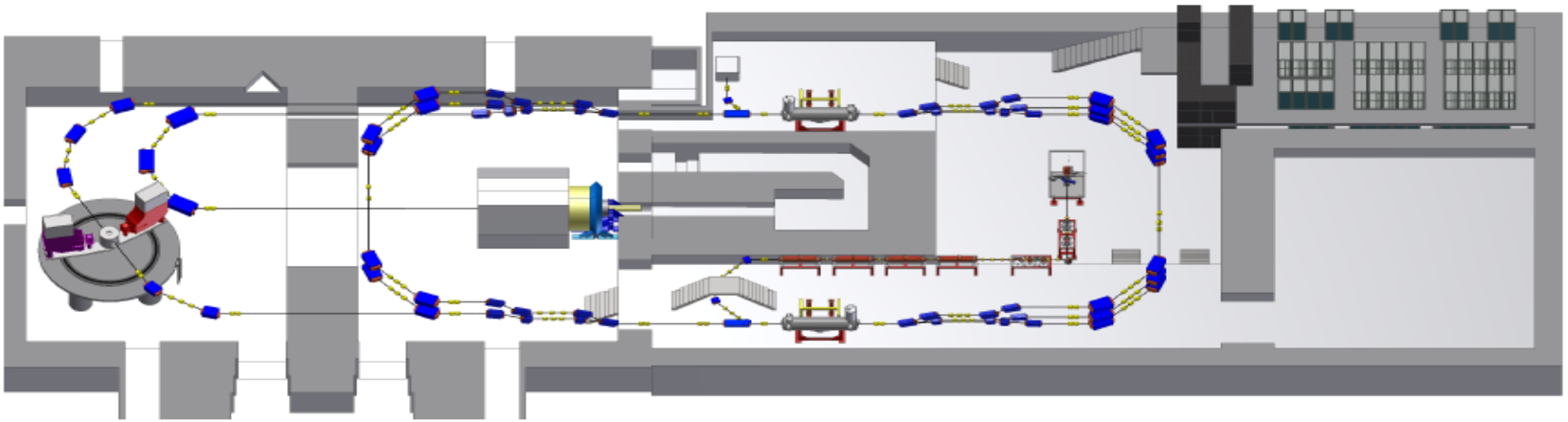
**1.3 GeV Booster Ring**
tagged photons (~ 1 GeV)
meson photoproduction, hypernucleus

**60 MeV electron linac**
~10 kW electron beam (150 uA)
Radioactive Isotope photo-production



# Electron accelerators

## MESA - Mainz Energy Recovery Superconducing Acclerator



- Super-conducting, recirculating LINAC
- Energy of up to 155 MeV
- Operation for external targets, 1 mA, polarized beam
- Operation in *Energy Recovery Mode*
  - Energy of up to 105 MeV
  - High beam current (up to 10 mA)
  - Large fraction of the beam can be used for an *Internal Target*

*...funded, under construction!*

Harald Merkel
Johannes Gutenberg-Universität Mainz

International Workshop on $(e, e'p)$ Processes
Bled (Slowenia), July 4th, 2017

# Electron accelerators (low energy)

## ECONOMIC ASPECTS OF ACCELERATOR IMPLEMENTATION

| Producer (accelerator type) | Energy [MeV] | Beam [mA] | Power [kW] | Price [M$] | Price [$/W] |
|---|---|---|---|---|---|
| IBA, Belgium (UHF) | 10 | 15 | 150 | 6.1 | 40.7 |
| RDI, U.S.A. (DC) | 5 | 50 | 250 | 4.9 | 19.6 |
| NHV, Japan (DC) | 5 | 30 | 150 | 5.0 | 33.3 |
| Vivirad,France(DC) | 5 | 200 | 1000 | 4.4 | 4.4 |
| INP, Russia (UHF) | 5 | 10 | 50 | 1.2 | 24.0 |
| NIIEFA,Russia (DC) | 1 | 500 | 500 | 1,9 | 3.8 |
| INP, Russia (DC) | 1 | 400 | 400 | 2.0 | 5.0 |

„New trends in application of modern electron beam generation in air pollution"
**Zbigniew Zimek** Warsaw, 14 01 12 2014