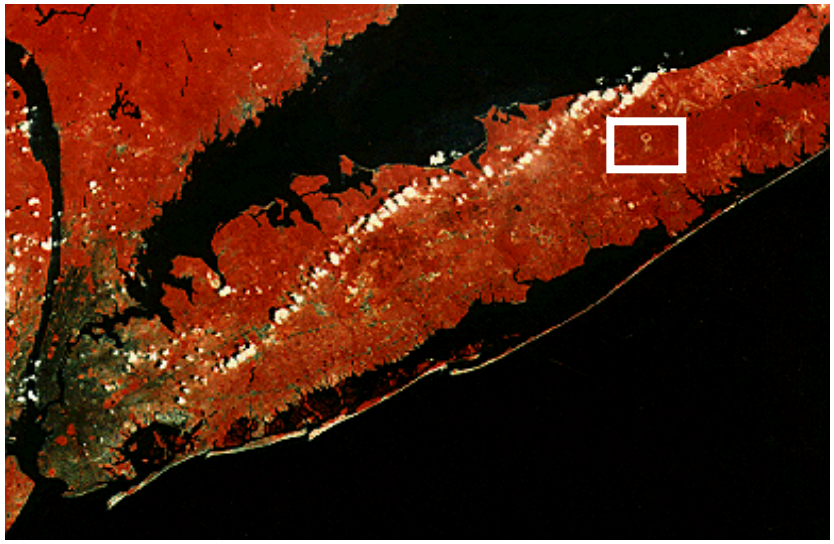
CIRCUITS RESEARCH AT BNL



Brookhaven National Laboratory (BNL) is a U.S. Department of Energy (DOE) scientific research laboratory located on Long Island, New York.

BNL carries out basic and applied research in the physical, biomedical and environmental sciences and in selected energy technologies.

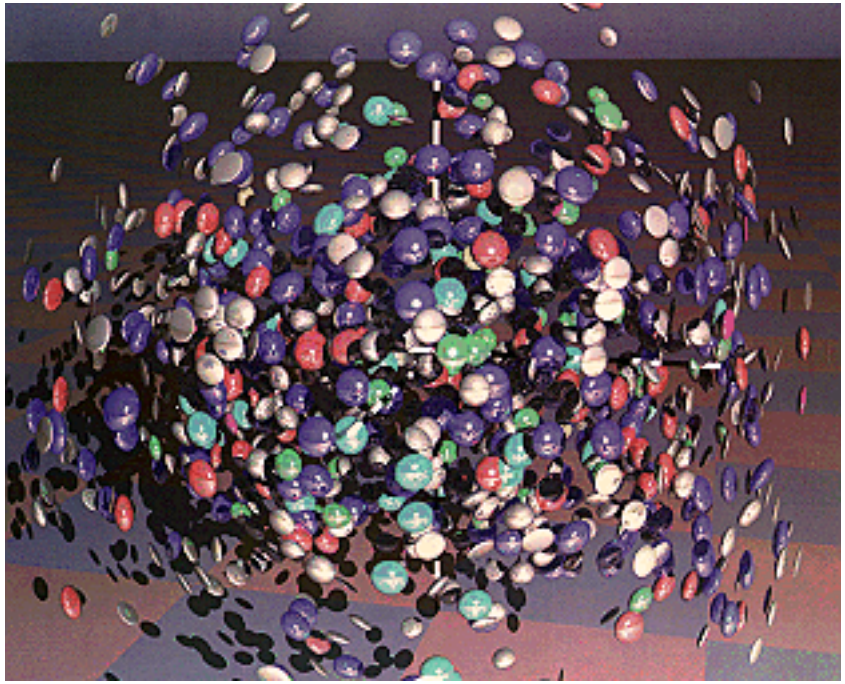
Some Statistics:

Owner and prime funding source:	U.S. Department of Energy
Operated by :	Associated Universities, Inc
Campus:	5200 acres NE of intersection of Rt. 495 (LIE) and 46 (William Floyd Pkwy.)
Staff:	3,200
1996 Budget:	$407M
Nobel Prizes awarded:	Physics ‘57, ‘76, ‘80, ‘88
Annual Purchases on Long Island:	$29M

f

.Main areas of research:

- **Experimental Physics**
- **Theoretical Physics**
- **Medicine**
- **Chemistry**
- **Biology**
- **Environmental Sciences**

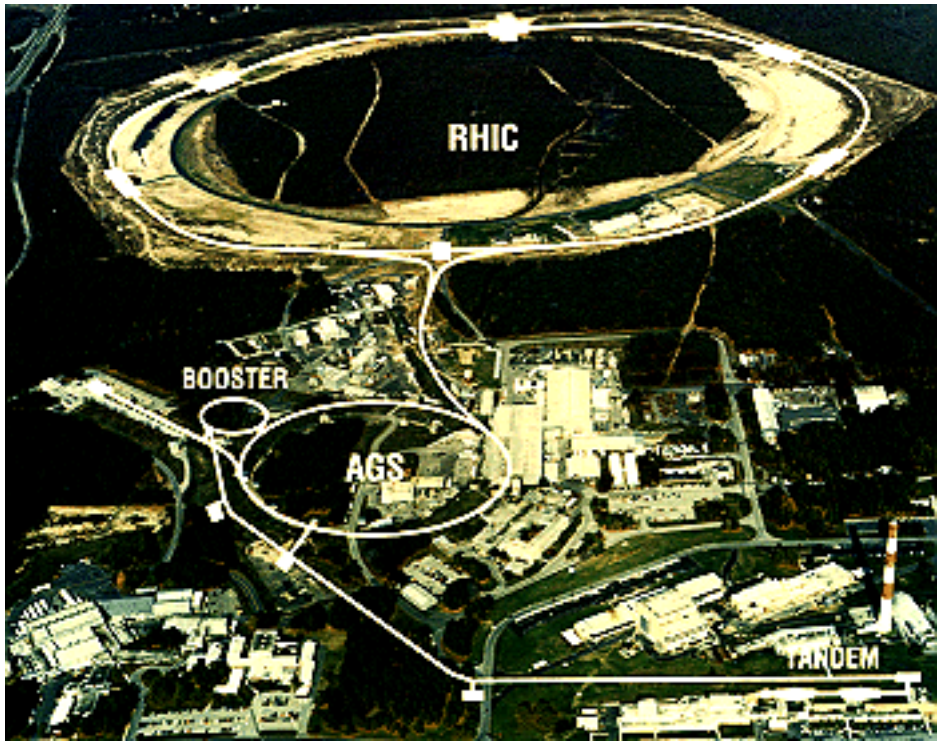


This picture is from a computer simulation of a gold ion collision experiment performed at the Alternating Gradient Synchrotron.

User Facilities:

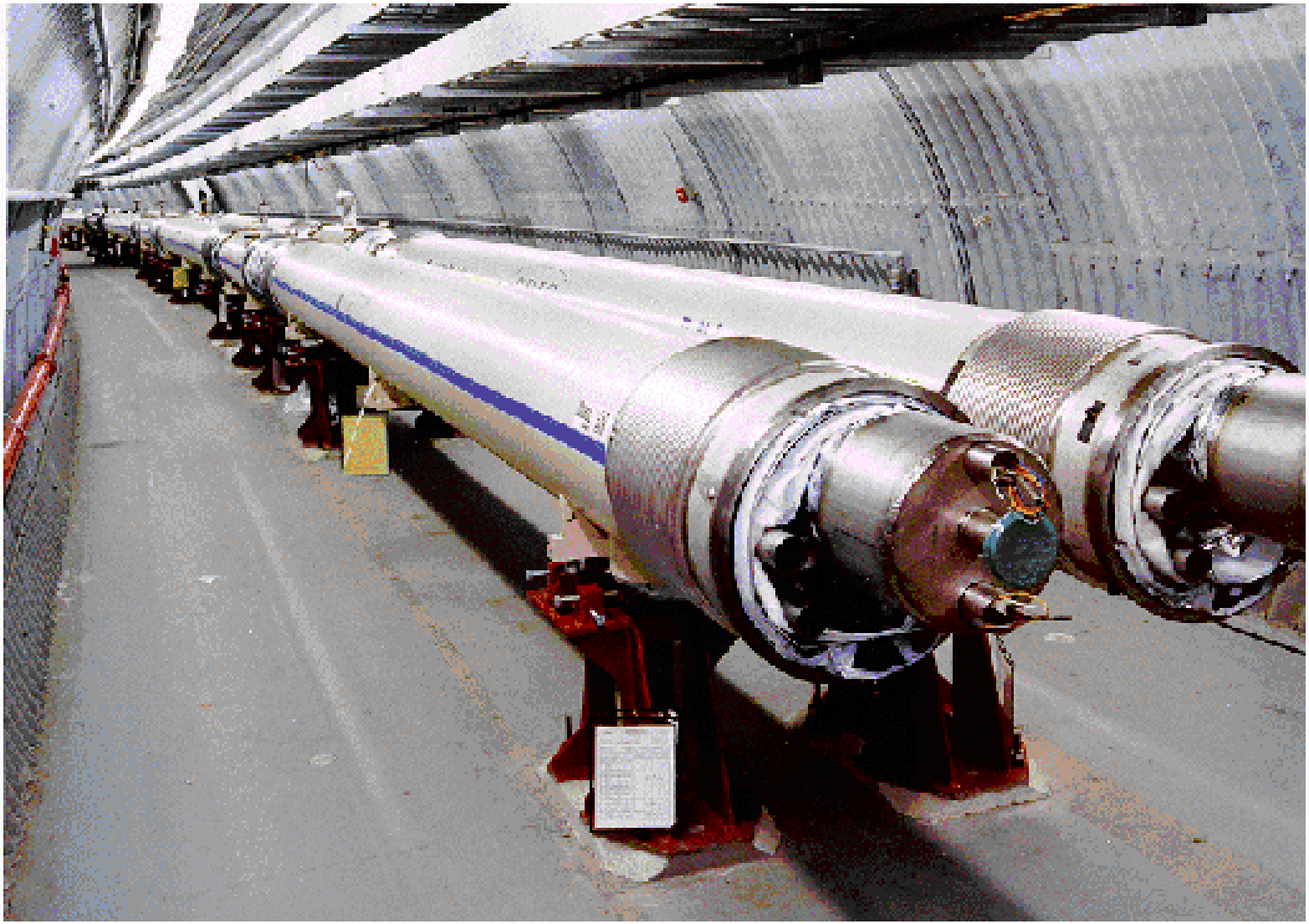
- **Alternating Gradient Synchrotron**
- **National Synchrotron Light Source**
- **High Flux Beam Reactor**
- **Scanning Transmission Electron Microscopy Facility**
- **60 Inch Cyclotron**
- **JSW 168 Small Cyclotron**
- **Tandem Van De Graaff Facility**
- **Accelerator Test Facility**
- **Brookhaven Medical Research Reactor**
- **Relativistic Heavy Ion Collider (under construction)**

RHIC - BNL's newest colliding-beam accelerator

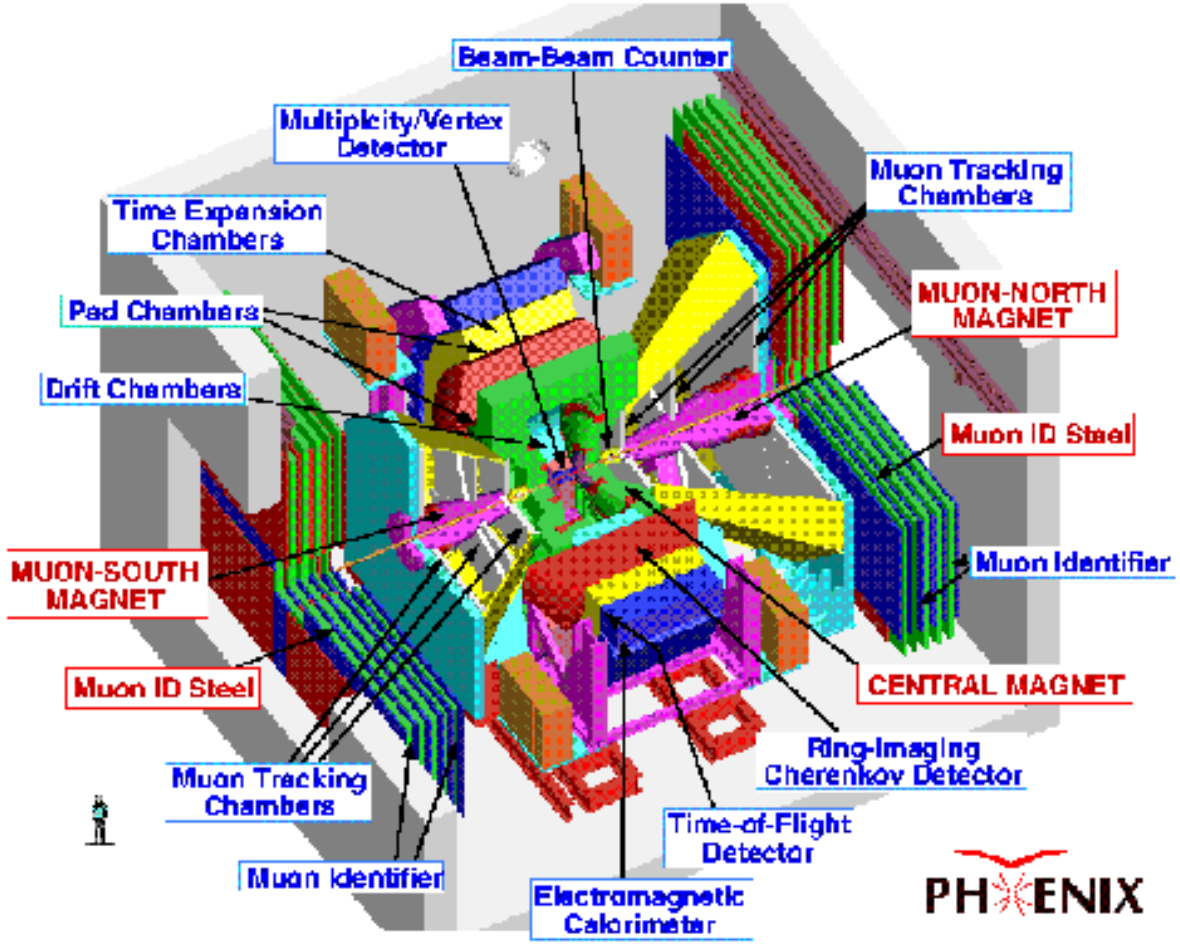


2 concentric superconducting magnet rings (3.8 km circumference); six interaction regions
Completion: expected Spring 1999

Superconducting Magnets in RHIC Tunnel

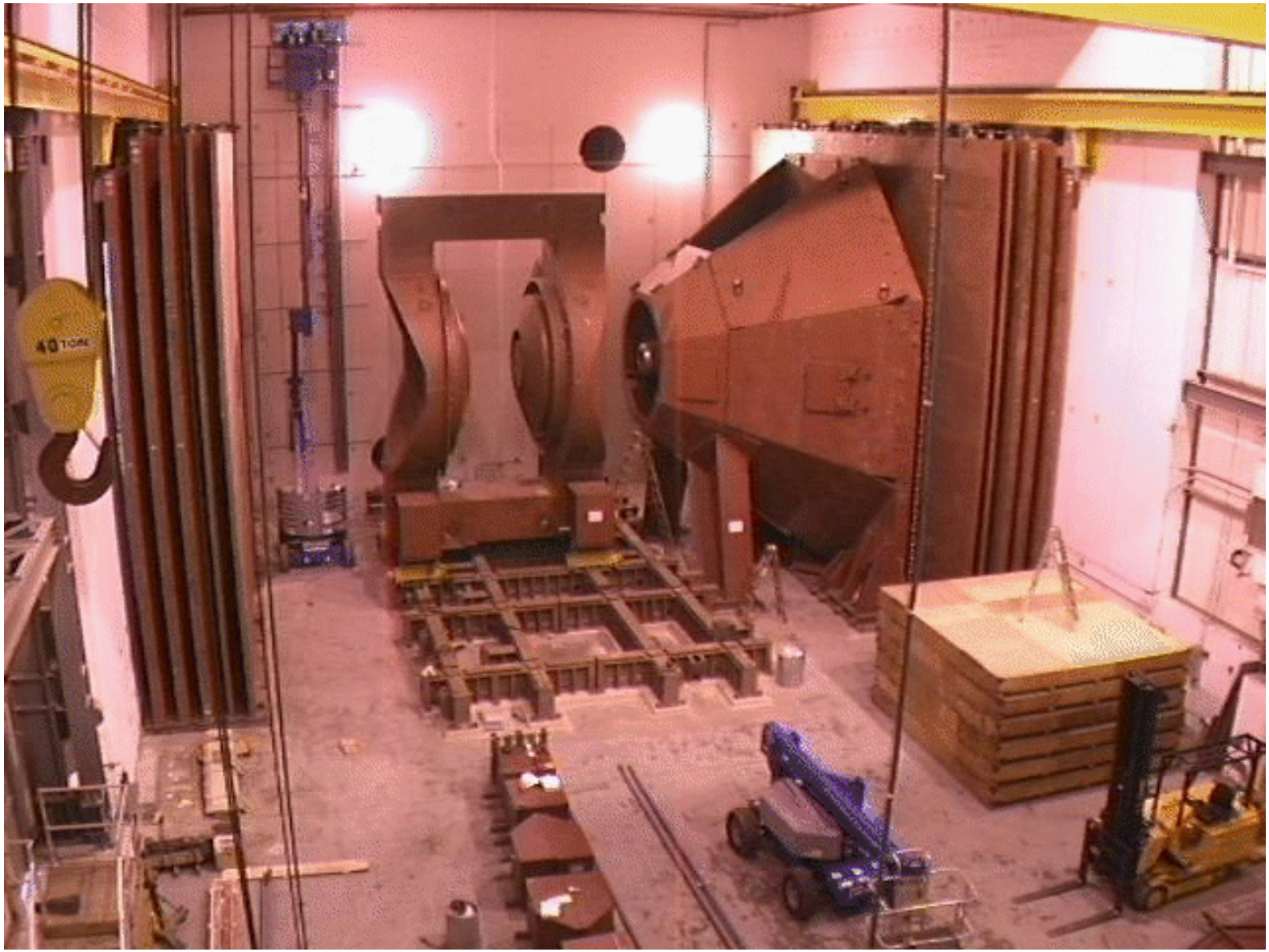


PHENIX Detector at RHIC

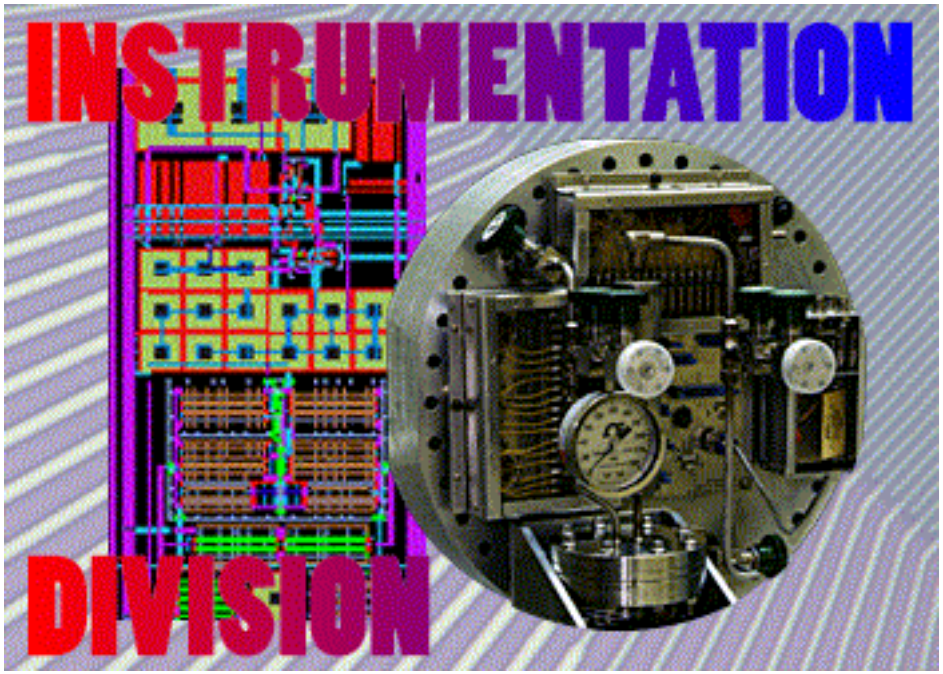


PHENIX: 8 o'clock "large experiment"

PHENIX Detector Construction Photo



Designs and constructs specialized, high precision equipment, custom-tailored for a particular experiment and represents state-of-the-art instrumentation.



Facilities

1.Gas Detector Laboratory

Clean rooms, fabrication, X-ray source and test facilities.

2.Semiconductor Detector Laboratory

Clean rooms, oxidation, mask alignment, wire bonding.

3.Hybrid Circuits Laboratory

Low noise electronics prototype development.

4.Monolithic Circuits Laboratory

Design, simulation, testing.

5.Computer Aided Circuit Layout

Design of detector electrodes and electronics boards, up to 12 layers.

6.Multi-layer Printed Circuits

Fabrication of detector electrodes, 12 layer circuit boards.

7.Optics and Metrology Laboratory

Digital optical profiler, long trace profiler.

8.Laser Laboratory

Photo-emission and fast switching studies, electro-optic modulator testing.

9.Electron Microscopy Laboratory

Fabrication of microstructures, analytical microscopy.

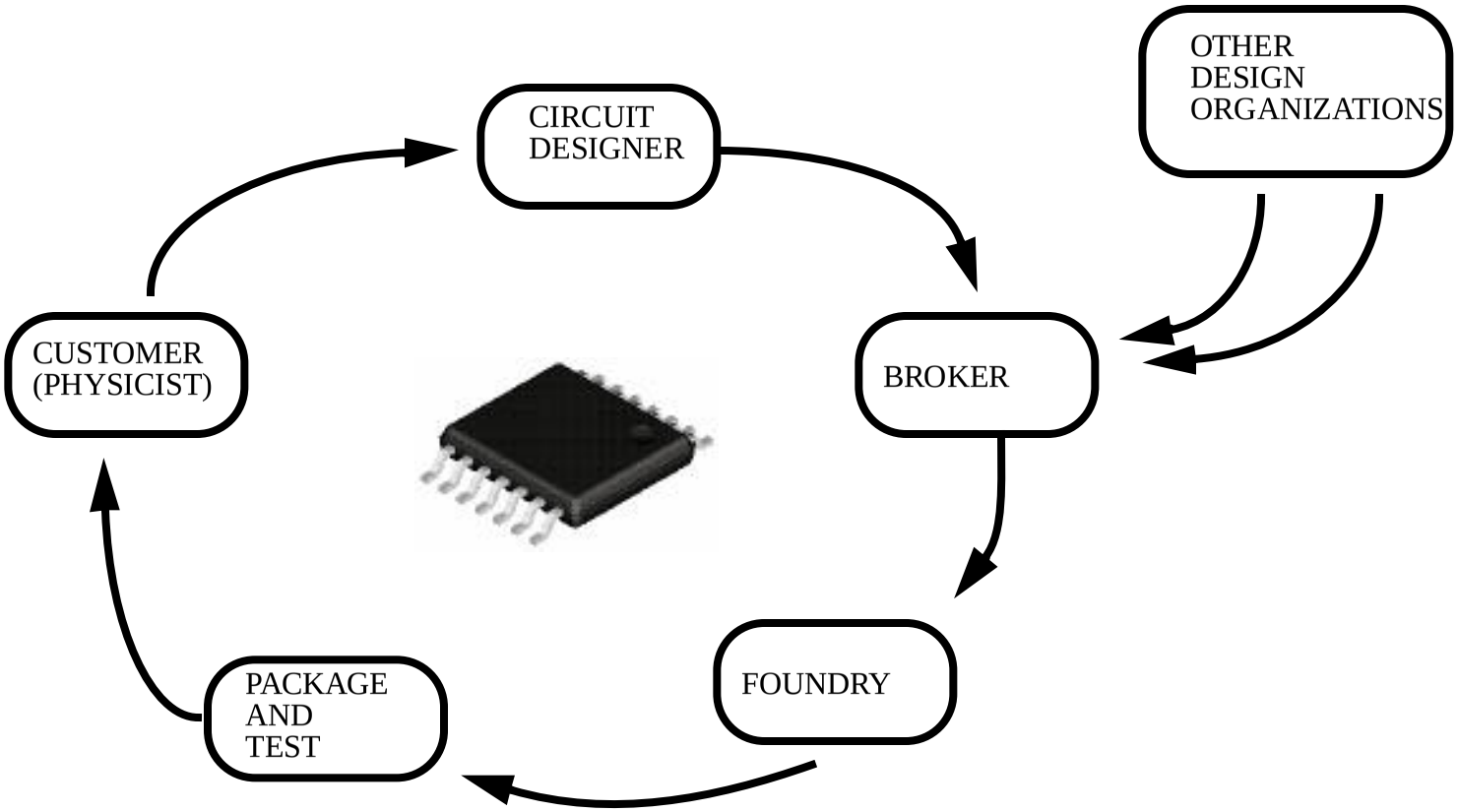
10.Vacuum Deposition Laboratory

Coatings and multi-layers.

11.Solid State Irradiation Facility (SSIF)

A 20kCi Cobalt 60 Source

DESIGN CYCLE FOR CUSTOM CHIP



To learn more ---

Office of Technology Transfer

Brookhaven National Laboratory
Associated Universities, Inc.
Building 902-C
P.O. Box 5000
Upton, New York 11973-5000
PHONE 516-344-7338
FAX 516-344-3729
E-mail: ott@bnl.gov
http://www.bnl.gov/TECHXFER/tech_transfer.html

Office of Public Affairs

516 -344-2345
http://www.pubaf.bnl.gov/~pubaf

Instrumentation Division

516-344-4266
http://www.inst.bnl.gov