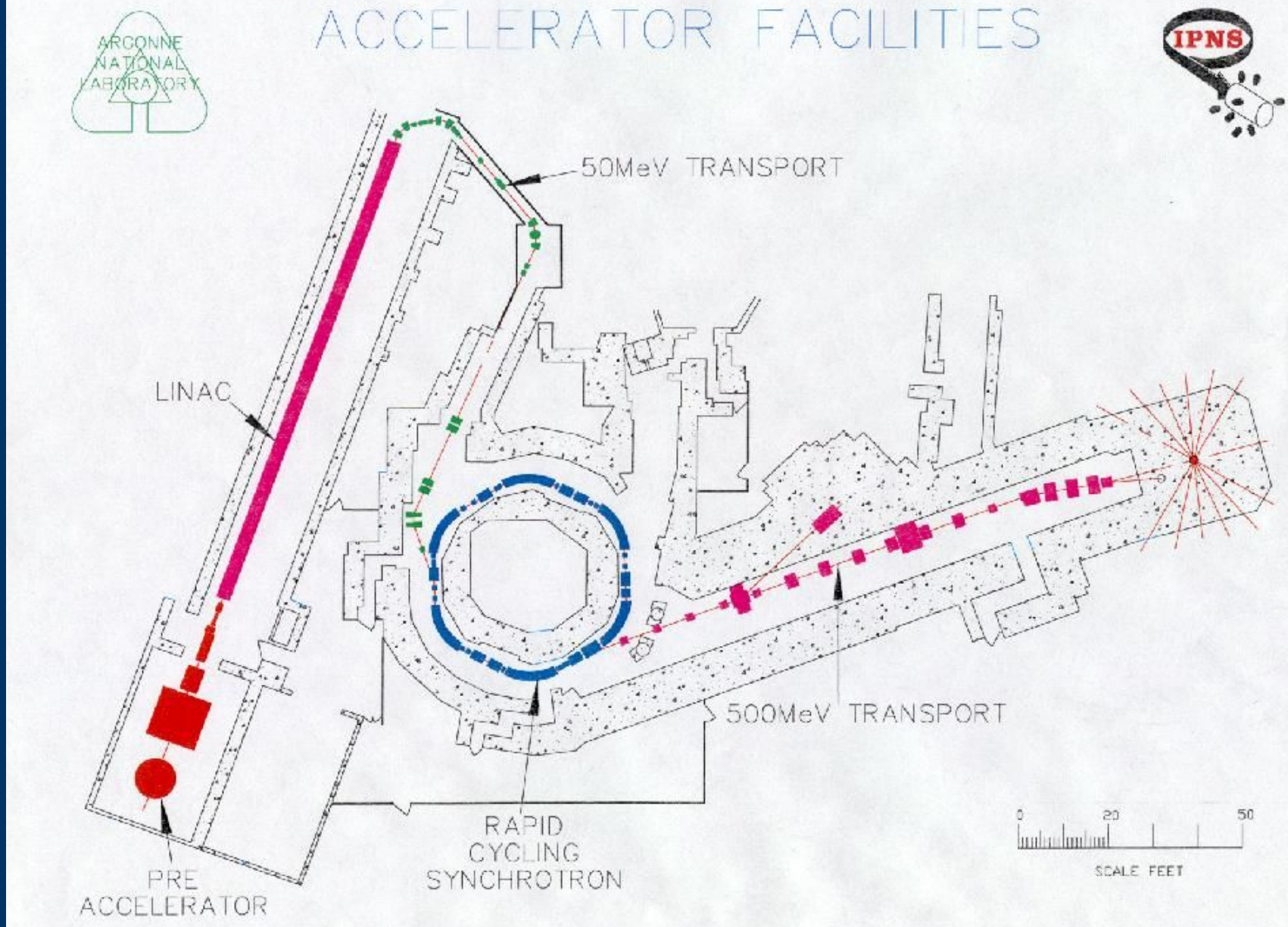
Argonne Possible Involvement in RD50

Some areas where the lab and division might make a contribution to RD50 objectives

IPNS information available at:
http://www.pns.anl.gov

ACCELERATOR FACILITIES



IPNS as a resource for RD50

- Energy ~1MeV
- Measured exposure
- High intensity
- SSC era studies done in collab. with Penn. (see example to right)

ACE Job No. 90-4037

NEUTRON FLUENCES AND ACTIVITIES FOR HEP IRRADIATIONS AT IPNS-H2

Sample	Neutron Fluence n/cm^2	Activation Rate (at/at-s) (±%) $^{59}Co(n, \gamma)^{60}Co$ ($\times 10^{-14}$)	$^{58}Ni(n, p)^{58}Co$ ($\times 10^{-17}$)
35	4.21×10^{11}	13.5 (7.0)	10.5 (8.0)
36	2.43×10^{11}	7.39 (8.0)	6.49 (10.0)
37	9.23×10^{12}	69.4 (5.0)	109 (5.0)
38	6.55×10^{12}	63.0 (5.0)	62.5 (5.0)
39	6.08×10^{13}	149 (5.0)	141 (5.0)
40	8.00×10^{13}	169 (5.0)	216 (5.0)
41	1.01×10^{14}	173 (5.0)	317 (5.0)

The neutron fluences for the dosimeter wires from your IPNS-H2 irradiation on 11/7/89 are shown in the above table; these values were determined as outlined in L. Greenwood's memo of 6/2/89. The absolute uncertainties in these fluences are 15%.

The uncertainties for the activation rates are propagated from the relative difference between duplicate counts with an added 2% to account for calibration uncertainties.

Center for Nanoscale Material

Nano- and Microlithography

Nano- and microlithography capabilities are key to top-down fabrication of nanostructures. Acquisition of powerful new state-of-the-art tools is planned. Among these tools are a 100-kV electron-beam lithography tool, reactive ion etch tools, a cross-beam-focused ion beam tool, and advanced metrology tools. Current capabilities include

* Optical microlithography using a dual side contact print aligner
* Small sample reactive ion etch, single chamber
* JEOL 840 SEM with a beam blanker and Raith Elphys software
* Raith 150 low-voltage electron-beam lithography tool (September 2003)
* Access to a JEOL JBX-6000FS 50-kV electron-beam tool at the University of Illinois at Urbana-Champaign
* Access to a JEOL JBX-9300FS 100-kV electron-beam tool at the New Jersey Nanotechnology Consortium