Prioritizing Tasks

First Task : **Building a Collaboration** – We have successfully done this over the last couple years with the workshops. The rest is possible because of this network. A website that no one looks at or cares about is a lot of wasted work.

High Priority (my first pass) . Resources required: Red = most (mid=black) Green=least

Assay Database

Website to include Facilities, Database, Code tools, etc

What should actually be in it? Can we make a list? Where should we host it?

Scheduling of Assay Facilities – machines available with sensitivities listed.

Compiled and maintained bibliography of relevant publications (e.g. like NEST has)

Where? With Website?

Simulation Benchmarking for users

which codes? new versions of Geant, FLUKA, radiogenic calculations?, others?

Who maintains it? Define geometry and physics processes.

Update radiogenic code, maintain libraries, provide tools, link to Geant/FLUKA/MCNP

Shared, dedicated facility for measuring nuclear-recoil response

users? liquid nobles and solid-state detectors? Notre Dame (again connections with nuclear physics)

Or just a compendium of results vetted by experts?

Benchmarking muon-induced neutrons underground

Collect the existing data and keep it on website – maybe analyze cosmic ray data from experiments for whom it is not a priority

Mount our own definitive experiment

Better understanding of (α-n) neutron bkg is crucial.

Shared Analysis Code for Screening (e.g. HPGe software) not part of cleaning/handling?

Discussed by Groups

Radon Plateout & Diffusion work – part of a larger Assay Consortium?

Cleaning/Handling Workshops (or focus of AARM workshop? or Website with Standards?)

Nuclear Physics connection: Cross sections for Cu, Ar, Ge, Cl etc.

Monthly Newsletter

To whom? In what format? How do we maintain AARM list? How broadly do we disseminate information? How do we add new members? What is membership?

Low energy neutron physics (angular correlations, SF, α-n)

What is required? Can approximations be benchmarked (e.g. angular correlations)

Provide specialized code like NEST to community. Is this AARM or Geant4?

Generally – how do we interface with Geant Collaboration?

e.g. Documentation of specific physics models contained within Geant4

Is it there, but not communicated? Who will be responsible?

e.g. α-n modeling vs SOURCES vs our own efforts

Muon capture studies from shallow depths

Muon distributions: MUSUN, Geant4, independent code.

Should it be formalized? Database of overburdens?

Parameterizations of showers emerging from rock.

Collect individual neutron (and other) detectors within the Soudan Veto shield

Instrumenting the entire floor with a grid of NMM. Is this a facility?

Standardization of neutron calibration techniques

Difficult or not worthwhile

Database of spectra produced by SOURCES, should be shared code
Purification techniques for noble liquids
    General point: How do we incorporate tools for a subset of the consortium?
New Assay technique R&D
    Maybe a future agreed-upon proposal to Agencies – coming from the consortium?
New screening infrastructure
Making Geant4-embedded code available in a platform-independent way.
Direct a-n screening is impractical – better to concentrate on SOURCES-type work
An overall Framework for Simulations (a.k.a. Virtual MC)

Missing Items

What did I miss that WAS discussed?

Cosmic Ray physics: Is there something we should encourage within the
Cosmogenic Activation: Storage of materials, Physics resources
Which other communities do we "consort" with and how?
    Radiochemists, nuclear physics, Bio? Geo? Portals to Other fields' research Sites
Workshops – continue? What format? Travel reimbursements?
User Facilities for Screening.
    Public use of the data Public access requirements to data from user facilities.

INSTITUTE FOR UNDERGROUND SCIENCE

Integration of scheduling and resources between sites: Integrative Website

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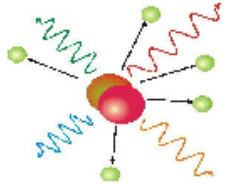
Integrative Website

Working toward a cooperative approach to sensitive radiation techniques and low background counting



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- Members
- Research Portals
- Facilities and Scheduling
- Commercial Suppliers
- Sources and Standards
- Counted Materials Database
- Participate in the Integration Process

Want your research listed?

Member Profiles

If you are a currently registered member of the integration website you can edit your contact information as well as add links to our Research Portals, and Facilities sections. Please log in using your assigned 4 digit ID number below and the email address you have register on this site.

Email Address:

ID number:

Submit

Forgot your ID#? Click here

The role of DUSEL and IUS would be to integrate these sites to maximize physics throughput and use the leftover capacity to pay for operating systems

Suggestions? Send them to integration@physics.umn.edu

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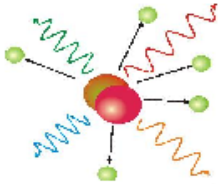

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Research Portals

Anthropology	human civilizations, forensic studies, cultural history, isotope dating
Archaeology	human ancestry, evolutionary studies, fossils, isotope dating
Astrobiology	exobiology, origin and distribution of life in the universe
Astroparticle and Nuclear Physics	double beta decay, dark matter searches, solar neutrinos, neutrino beams, low background screening, ultrapure materials
Bioremediation	environmental cleanup, radiation monitoring, nuclear waste disposal
Environmental Geochemistry	Production and transport of pollutants in the environment, Ecotoxicology
Planetary and Space Science	planetary geology, solar system, aurora, solar wind, meteorite studies
Geomicrobiology	microbial ecology, environmental and industrial microbiology, life in extreme environments
Hydrology	history and mapping of water systems

Suggestions? Send them to integration@physics.umn.edu

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Integrative Website

Low Background Integration - Microsoft Internet Explorer

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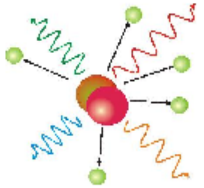

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Underground Sites

Waste Isolation Pilot Plant(WIPP)	WIPP offers its mine operations infrastructure and space in the underground to researchers requiring a deep underground setting with dry conditions and very low levels of naturally occurring radioactive materials.
Soudan Underground Mine	Soudan Low Background Counting Facility has an active muon veto shield covering an area of 35ft x 40th x 100ft.
Kimballton	The Kimballton site is located less than 30 minutes from Virginia Tech
Sudbury Neutrino Observatory	SNO provides 6010 Meters Water Equivalent(MWE) of shielding from cosmic rays and offers a uniquely low background environment for the next generation of experiments exploring the frontiers of particle physics and astrophysics.

Shielded Surface Sites

Lawrence Berkeley National Laboratory	Berkeley Lab
	PNNL has become an international leader in ultra-low background measurements of trace quantities of isotopes by

Suggestions? Send them to integration@physics.umn.edu

Some Conclusions

The Website's time has come. Separate this proposal from hardware initiatives

Working Groups

- Overall design, siting and content of Website, incl newsletter and publicity

Content Working Groups

- Assay database
- Geant/FLUKA/MCNP code tools, benchmarking, GEANT liason
- Nuclear databases, a-n
- Reference compilation – part of each working group
- Screening facilities scheduling & sensitivities – consortium building
- Research Portals – interdisciplinary studies
- Info related to neutron benchmarking & cosmogenic data & muon distributions

Underground showers (neutrons) Benchmarking Experiment

Facility for nuclear response studies (noble liquids, Ge)

Update radiogenic code, maintain libraries, provide tools, link to Geant/FLUKA/MCNP

Radon Plateout & Diffusion studies (what goes in database, what gets measured)