



The Artificial Intelligence and Software for Physics Applications Department (AISP)

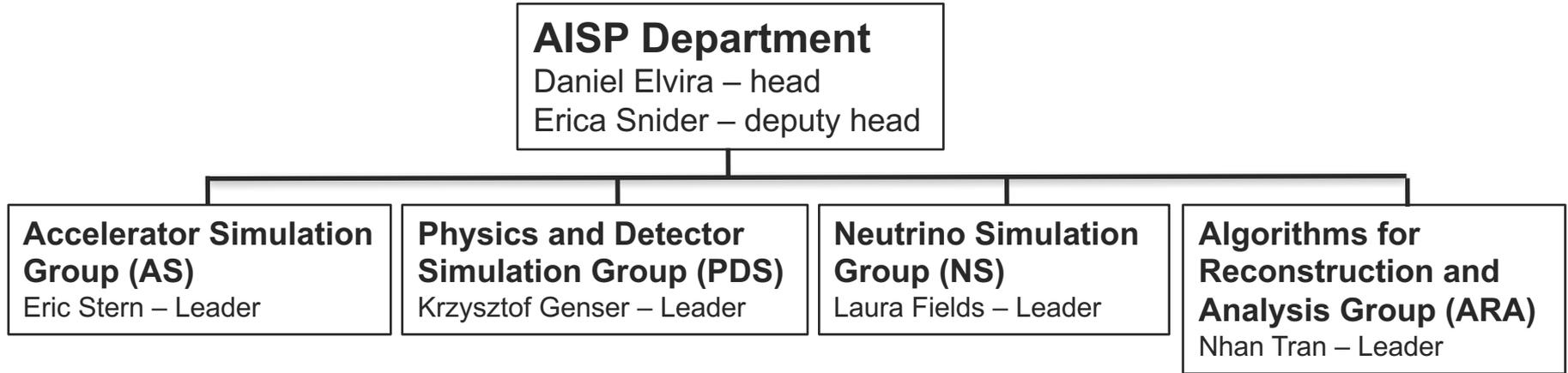
V. Daniel Elvira, AISP head

AISP all-hands meeting, December 2nd, 2019

The (always evolving) mission of the AISP department

- Our department does software for physics applications: SPA Department?
- Artificial intelligence (AI) promises to reshape High Energy Physics
- FNAL needs an organization to house AI activities, exploit funding opportunities
 - AI cuts across all FNAL organizations
 - AI activities largely housed in the Scientific Computing Division (SCD)
 - Large fraction of AI experts live in the (former) Machine Intelligence and Reconstruction Group (MIR)
- **The Artificial Intelligence and Software for Physics Applications (AISP) is born**
Mission: perform R&D, design, develop, validate, commission, support software for physics applications in the areas of accelerator, physics generators, and detector simulation, reconstruction, and analysis for the benefit of the experiments and projects associated with the FNAL scientific program. Development of expertise and tools associated with AI and modern computing architectures deserve a special focus.
- **AI Project is born (cuts across all FNAL organizations) – lead by Nhan Tran**

The AISP organization chart



- Erica Snider will have a special focus on the IF topics within AISP, and help with the management of the ARA group
- Nhan Tran (Wilson Fellow who transferred from PPD): leader of the ARA group within SCD, coordinator AI activities across FNAL
 - Thanks to Rob Kutschke who served as MIR group leader since its creation
- Welcome new AISP members: Leo Aliaga, Steven Gardiner, Kevin Pedro, Alexei Strelchenko, Nhan Tran

Activities and funding

- Group leaders will talk in a few minutes about the diverse set of activities that our AS, PDS, NS, ARA groups are involved in
- There are three aspects of our activities: the science *per se* (particle physics/cosmology), the S&C tools for science, the underlying technologies
- Funding comes from different DOE sources: EF/IF research and operations, Computational HEP, Advanced Scientific Computing Research (SciDAC), Center for Computational Excellence (CCE), ..., may get AI funding from other sources
 - Blessing: we do not depend on a single funding source
 - Curse: lack of flexibility, strings attached
 - Emphasis on modern computing architectures and AI
- Total HEP budget has improved or stayed flat lately but the allocation for physics research and operations has shrank at the expense of that for facilities
 - FY20: we should be able to execute our plans as in budget input, may not be able to replace all retirees, will need to cut travel supported by operations by half

Team philosophy and core values

- International and diverse community (different national and cultural background) and a broad set of skills, experiences, interests, and career paths
 - Computing professionals, postdocs, scientists (most of us physicists by training – advantage of a common language)
 - Our department does scientific research in computing and particle physics & cosmology, and develops S&C tools for science
- Line management is important for organizational purposes, but remember that we are all colleagues (especially when we are discussing science)
 - "Unthinking respect for authority is the greatest enemy of truth", Albert Einstein
 - We must treat each other, as well as the rest of FNAL's personnel, contractors and users with respect, following FNAL's [Statement of Community Standards](#)
 - We must follow FNAL's safety procedures
- We need to remember that we are neither a corporation nor a business, our vision is to solve the mysteries of matter, energy, space and time for the benefit of all

An issue of interest and a couple of requests

- Our AISP department wants to provide maximum flexibility within FNAL's rules in what relates to work hours, sick leave, vacation time
 - Flexibility typically makes people more available to others and more productive at work
 - Please take a look at the [AISP work attendance rules](#) and send comments or suggestions to your group leader. (Living document evolved through the lives of previous incarnations of the department.)
- Weekly reports become part of the AISP report to SCD (Tuesday meetings)
 - Make your effort visible to the department and the division
 - Help SCD leadership in making technical, management, funding decisions
 - No need to report every week on every topic. Summarize progress, communicate news in a short, clear, and crisp way
- Report to Chronos (FTL) the same every week as indicated by your group leader in accordance to budget input

Thanks for listening

Questions?

Comments?

Remember that the offices of group leaders and department head/deputy are always open for you to bring ideas, ask questions, make comments, express concerns of every kind