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MeV Summer School Motivation Letter

I am a first year Graduate Student in the Nuclear Engineering at the University of Illinois Urbana-Champaign and a member of Dr. Kathryn Huff's Advanced Reactors and Fuel Cycles research group. The group's research revolves around the usage and development of computational tools to study different types of advanced reactors and their encompassing fuel cycles.

My research in particular focuses on fuel cycle transition scenario and geologic repository modeling. I am interested in determining how different transition scenarios and their varying use of advanced nuclear technology will quantitatively affect environmental, economic and other metrics. One of the pressing issues currently facing the US nuclear industry is the absence of a nuclear waste repository. Depending on the direction taken by the industry in terms of reprocessing and the deployment of advanced reactors, the composition of the nuclear waste will change. Therefore, by being able to computationally model the different types of reactors and their respective waste product compositions, various metrics related to the fuel cycle and repository can be evaluated. But, to produce advanced reactor waste composition data, a good understanding and execution of reactor physics computational modeling is required.

MeV Summer School will provide me with a better grasp of the current computational tools and concepts related to advanced reactors that are currently being developed. With this knowledge, I can better study the long term effects of each advanced reactor type. MeV Summer school will also equip me with model development and validation techniques that will assist me in development of computational tools to evaluate fuel cycles that incorporate advanced reactors. With these tools, we can develop a better quantitative understanding of how the addition of advanced reactors to the current fuel cycle will impact waste, environmental, economic and other metrics.

My future career goals is to join a national lab or corporation and continue meaningful work in advocating for nuclear energy and improving the current fuel cycle. Be it, developing 4th generation nuclear reactors that produce less radioactive waste or researching the methods to improve the current nuclear fuel cycle and waste management techniques. Therefore, MeV summer school will better inform and prepare me to meet these career goals.