Reducing Global Warming

an urgent quest to find an acceptable avenue for nuclear energy

R. Bruce Vogelaar, Virginia Tech NCSU Physics Colloquium, October 12, 2020 4-5 pm via Zoom



Nuclear energy is globally recognized as a base-load capable energy source with essentially no carbon dioxide footprint. Light-water reactors have already been proven, and advanced Gen 3+ and Gen 4 designs exist. But broader adoption is not just a technology issue – to unlock the true potential, like in a tumbler lock, requires all the pins to line up at the same time. One needs to also address long-lived waste, the potential for major radiation release during accidents, the large up-front costs, and the potential for weapons proliferation. The latest designs often mitigate one, or even two items, but so far not all of them at once – which is what is really needed.

By merging high-energy physics accelerators and nuclear engineering, an avenue to remove these barriers all at the same time is emerging. I will review the drivers behind the global dismay with existing nuclear energy to date, and how a reenvisioned accelerator-driven system changes the picture – with designs being developed by several small companies outside of mainstream nuclear engineering, and helped along by physicists!