PURDUE UNIVERSITY

Nuclear Engineering
COLLEGE OF ENGINEERING

Nuclear Engineering Seminar

Bret Kugelmass

Energy Impact Center

Wednesday, September 25, 2019

3:30pm | PHYS 112

Bret Kugelmass is a former technology entrepreneur who has dedicated his focus to climate and energy challenges. One of the early pioneers in commercializing unmanned aerospace technology he founded and remained CEO of Airphrame Inc. for five years up until its acquisition. Prior to this, he received his Masters' in robotics from Stanford University and his earlier work includes designing lunar rover control systems for NASA and a concept electric car for Panasonic. In 2017, he launched a Washington, DC based research institute, the Energy Impact Center, focused on exploring the challenges and opportunities of nuclear power's role in deep decarbonization. Their work includes techno-economic analysis of energy technologies, hosting clean-tech prize competitions, and publishing audio interviews with hundreds of experts under the "Titans of Nuclear" brand.

Nuclear Power's Role in Combating Climate Change

Abstract

Solving climate change requires far more than the total elimination of annual greenhouse gas emissions. The complete decarbonization of electricity, agriculture, transportation, building heat, and industrial sectors may reduce the rate at which we accumulate heat, but will have no impact on the previous emissions that already, and will continue to, cause the majority of radiative forcing. Taking a first principles approach that draws from mathematics, physics and economics, Bret Kugelmass derives a pathway towards global scale removal of greenhouse gas on a timeline fast enough to avoid the worst scenarios. He argues that by deploying nuclear energy at scale, we can power the transition to a global carbon negative economy in a way that aligns short-term individual economic motivations with long-term environmental preservation. He connects this vision to current market conditions, analyzing the nuclear industry through a multifaceted context—economics, technology, history, supply chain, communication, and policy, as he dissects counter-intuitive narratives and explores pathways toward exponential growth.