FUTURE SCIENTIFIC METHODOLOGIES

Virtual Community of Interest Workshop
November 2, 5, 10, 2020

# Future of Scientific Methodologies Workshop Goals

- The Department of Energy's Office of Science runs frequent workshops aimed at identifying basic research needs that need to be addressed in DOE research. This is not one of those workshops.
- Instead, the goal is to do something much harder, namely to identify credible futures in a 20-30 year timeframe and their implications for DOE science, and specifically for ASCR science.
- Why are we doing this? Because the future is not just something that happens: it is path dependent. Important aspects of the world of 2050, and certainly DOE's role in that world, will depend on choices that are made by both scientific institutions and individual researchers over the next 10 to 20 years. Plans made today are unlikely to survive intact even to 2030, but having plans will allow the nation, DOE, the labs, and individual researchers to be better prepared.
- In pursuing the task defined for this workshop, we need to strike a balance between science fiction and conservative more-of-the-same thinking.
    - We can all imagine a future in which time travel exists or we are all uploaded to the Matrix (or indeed both). But whether fun or terrifying, such speculations tell us little about what to do today or tomorrow.
    - Similarly, we will often not be too far wrong if we assume that the future will not be so different from today. But such thinking does not help us prepare for the unexpected.
- Our collective challenge is thus to speculate widely but intelligently about possible futures, and to do so with a view to the path that we may follow to get to them. Think about futures that are credible even if unlikely, and then consider what those futures may mean for ASCR over the next 5-10 years. What precursor technologies need to be tracked, what investigations need to be conducted?

Why you are invited

- A few words about why you specifically have been invited to participate in this workshop. DOE laboratories employ, serve, and collaborate with tens of thousands. How did we select the 150 or so of you that are with us today?
- We have sought people that are reputed to be particularly imaginative thinkers.
- That cover a broad spectrum of scientific and technical expertise.
- That combine established researchers, who presumably know something about science and technology, and have ideas about how the two may evolve in the future, and early career researchers, whose thinking we hope is unconstrained by decades of experience, and who may well be here in 30 years.
- Two requests: First, please look beyond your own parochial interests as you engage in these discussions. Second, because the group is so diverse, do not assume that someone else will bring up your ideas. Your perspectives are likely unique, and we need them represented.