

# **The Role of University Scale Groups in Fusion Research for the Next Decade**

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## **Abstract**

Over the next 10 years leading up to ITER, we envision significant changes in research activities and agendas throughout the fusion research program, especially at universities, even on a nearly flat budget. Historically, universities have played many important roles in fusion research, two we present to FESAC are the university role as source of innovative ideas and discovery science, both in small scale experiments and in theory and simulation, and second as contributors in many ways to the experimental and theoretical efforts at our larger facilities. The former role was presented earlier. In this paper, we focus on the latter of these roles. The technological challenges and open questions that must be addressed for scientific progress in the coming decade leading up to burning plasma experiments, will and must have a significant university research engagement. Recent declines in the size of university-based research programs in fusion energy sciences has drawn concern by many in our community about support for university-based fusion research in our strategic plan. University scale experiments are an ideal place to validate physical models and simulation codes that are applicable to fusion research at our large facilities. Many of these models will be brought to bear on future burning plasma experiments and can lead to discoveries that advance the state of fusion energy science. Within this paradigm, there is also a cost effectiveness and an enhanced flexibility to university scale efforts, which can and have historically brought benefit to programmatic vision at our flagship experiments. In this paper, we discuss a vision for the role of university scale groups in fusion research at our large facilities, and what can help to engage the university community in this collaborative effort.