



Australian ITER Forum

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Working Group,
Physics Decadal Plan 2011,
info@physicsdecadalplan.org.au

Date: 31st March 2012

Re: Submission to the Exposure Draft of the Physics Decadal Plan

Dear Working Group,

The Australian ITER Forum spans over 150 Australian scientists and engineers drawn from universities, Government research laboratories, and industry, who support a greater Australian involvement in the development of fusion energy via international project participation, particularly the next step fusion energy project, ITER, fiscally the world's largest science experiment. ITER is designed to demonstrate the technical and scientific feasibility of fusion power.

Fusion, co-discovered by Australian Sir Marc Oliphant in 1934, is the process whereby lower atomic weight elements join to form a heavier element. This is the fundamental process that powers the Sun and the stars. Fusion energy offers millions of years of base load energy generation, with almost no greenhouse gas emissions and very little radioactive waste compared to nuclear fission energy and coal. It is also intrinsically safe – a fusion power plant cannot melt down, and the fuel cannot be easily used as a weapon. In an era of anthropogenic climate change, the development of alternative energy sources to power sustainable development is paramount.

We are grateful that aspects of fusion research and ITER have been identified in “Part 2: Research Report”. Unfortunately, we note that ITER has not been identified in “Part 1: Exposure Draft”. We believe that this omission is inconsistent given that this is the largest of scientific experiments. We are also concerned that there is an implicit disconnect in scale between proposed funding schemes that pertain to global science, and might support participation in projects like ITER. Typical large grants of the former International Science Linkages scheme (a replacement is proposed in recommendation 7) were of order \$500k. In contrast, any new “Landmark Funding Scheme”, (proposed in recommendation 4) is designed to cater for research initiatives of order \$100 million. We propose that recommendation 7 be modified to span the funding scale gap by evolving the former International Science Linkages scheme into a new scheme that will cater for both short time frame projects and larger scale endeavours, such as targeted research participation in the ITER, CERN and LIGO projects.

In detail, we recommend the following inclusions part 1: the executive summary, in the Physics Decadal Plan:

- page 11, 36. Recommendation 4: We propose citing full-partner participation in ITER as an example of a major research initiative appropriate for a Landmark Funding Scheme.

- page 12, 52, Recommendation 7: We propose evolving the recommendation to

“Establishing a successor program for the International Science Linkages scheme to enable access to major international physics facilities. Such a scheme would cater for both short time frame projects and larger scale endeavours, such as targeted research participation in the ITER, CERN and LIGO projects.”

- page 20. We propose inclusion of a description of ITER into part 1 by appending the paragraph

“In the long term, generating electricity from controlled thermonuclear sources presents formidable challenges that will require a deep and prolonged effort from global consortia of physicists and engineers. Close collaboration between multidisciplinary teams will be required to meet these challenges.”

with the sentences

“ An example is the international consortium supporting the world's largest science experiment, ITER. The ITER experiment, supported by governments spanning half the planet's population, is designed to demonstrate the technical and scientific feasibility of fusion power.”

We thank the Working Group for providing the opportunity to comment on the exposure draft of the Physics Decadal Plan. Representatives from the Australian ITER Forum would be willing to discuss these issues with the Physics Decadal Plan working group on request.

Yours Sincerely,

A handwritten signature in blue ink that reads "M. J. Hole". The signature is written in a cursive style with a long, sweeping tail on the letter "e".

Dr Matthew Hole, Chair, Australian ITER Forum.