

On a primary goal for the alternates program

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It has been suggested that I revise and slightly expand the originally-posted document, the purpose of which was to suggest a primary goal for the alternates program.

Given that there are clear national, and international, urgent societal needs for a reliable source of clean energy, with near-zero carbon footprint, I would suggest that this goal should be:

“To enable an earlier (or even much earlier) implementation of fusion power than is now envisioned for the conventional or advanced tokamak lines of development.”

The alternates program ought to place the strongest emphasis on approaches, concepts, or techniques which shorten the development path to fusion. A secondary emphasis, certainly, ought to be on approaches which make the final product more attractive – which would produce a “better” fusion reactor. However, “faster” is a much easier, clearer, and presently relevant benefit to tout to our funding agencies than “better”.

However, claims that a development path will be faster must be supported by a clearly laid-out research plan. Advance in the status of a concept/experiment to the high end of the Concept Exploration funding range, and certainly to a Proof of Principle class experiment, must require not only sound experimental results, but some level of experimentally verified modeling which supports the claim of a rapid development path. Even spectacular parameter improvements are not sufficient, if no physics basis exists for the improvements which allows a projection to the PoP class device, and beyond.

There may well be no concept available which satisfies this metric. However, there are likely projects which clearly do not and cannot satisfy it, and so the “faster” metric can be used to clarify their place in the alternates program.