

IAF SPACE POWER SYMPOSIUM (C3)
Solar Power Satellite (1)

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A SIGNIFICANT UPDATE TO THE HYPER-MODULAR APPROACH TO SPACE SOLAR POWER:
SPS-ALPHA MARK-IV**Abstract**

There are various systems concepts by which the vision of space solar power (SSP) might be achieved. One of the first 'hyper-modular' concepts was defined during 2011-2012 in a NASA Innovative Advanced Concepts (NIAC) program supported study: "SPS-ALPHA" – solar power satellite by means of arbitrarily large phased array. There have been several versions of SPS-ALPHA defined and analyzed since that time. The latest, "SPS-ALPHA Mark-IV" represents a significant improvement beyond past versions.

This paper will present the latest version of SPS-ALPHA — SPS-ALPHA Mark-IV — as well as the results of preliminary detailed systems analysis of the Mark-IV concept. It will also address a number of issues and concerns regarding the near- to mid- term (i.e., prior to 2034) that have been raised regarding the economic viability of SPS-ALPHA and related approaches, and the concept of space solar power more generally. It will conclude with an updated roadmap for the realization of space solar power and SPS-ALPHA Mark-IV.

Keywords: Space Solar Power, SSP, IAA, SPS-ALPHA