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Initial Design of a High-Power Ka-Band Klystron

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High-gradient high-frequency accelerating structures are in strong demand for the next generation of compact light sources. Accelerating structures operating in Ka-Band are foreseen to achieve gradients around 150 MV/m. Among possible applications of a Ka-Band accelerating structure we refer to the beam phase-space manipulation for the Compact Light XLS project as well and medical and industrial applications. In this paper, a Ka-Band Klystron amplifier is being investigated in order to feed Ka-Band accelerating structures. The initial design is presented including the high-power DC gun and the beam focusing channel.

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