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## Towards a realistic model for the ELI-NP GBS RF linac

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The ELI-NP Gamma Beam System is an advanced gamma ray source with unprecedented specifications of brilliance ( $> 10^{21}$ ), monochromaticity (0.5 %) and energy tunability (0.2 - 19.5 MeV). Here the challenging source performances are provided by the head on collision of a recirculated high power laser pulse and a train of 32 high quality electron beams at 100 Hz repetition rate for the RF power system. The machine is currently in its delivery phase in Magurele (Romania) and so a preparatory phase of the commissioning of the overall facility is already ongoing. In view of the commissioning a model as much “realistic” as possible for the RF linac is needed. The paper focuses on the aspects that are mostly involved in the robustness, operational reliability and active and passive element constraint specifications as the multipolar contribution coming from the input couplers of the high-gradient RF gun and the insertion of measured field maps in tracking codes for high gradient - warm C-band accelerating sections (including RF couplers) and magnets as well.

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