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Upgrade plan of the SPring-8 linac for the new light source

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The injector linac of SPring-8 is under construction, and will be completed in 1996. It is designed not only for the injector but also for other uses in the future. We are planning several uses of it besides the use as an injector. It will be used as the accurate beam injector to New-SUBARU, which is the synchrotron designed by Himeji Institute of Technology, for the short wave length (soft x-ray, to VUV) light source. The other use of this linac is the R&D of the spontaneous amplitude of self emission FEL. We have planed to make the line for the insertion device beside the tail of this linac. This report presents the study of the modification plan of the linac for these purposes. The gun will be replaced by an rf-gun, and an rf phasing system must be tuned for more accurate phase control, and several alignment methods are tested.