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Development of compact RF pulse compressors and pulse modulation experiments

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The Accelerator Laboratory of Tsinghua University has been carrying out research on radio frequency (RF) pulse compressors at both S-band and X-band. The S-band high-power test facility mainly consists of two S-band klystrons and a SLED-I type pulse compressor. Pulse modulations including the phase-to-amplitude modulation and high efficiency pulse compression have been demonstrated experimentally. As for the development of pulse compressors, we have successfully designed, fabricated and tested an S-band compact pulse compressor with a single spherical resonant cavity and an RF polarizer. The available RF peak power of 70 MW can be compressed to a peak power of more than 500 MW. An X-band pulse compressor using a high Q0 corrugated circular cavity and an RF polarizer has also been designed and microwave measured.

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