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Development of the High Sensitivity Multi Channel Bulk Absorption Laser Calorimeter CHUNXIAO SU, CUNBANG YANG, WENHONG LI, National Key Laboratory of Laser Fusion, Reseach Center of Laser Fusion, China Academy of Engineering Physics — The ICF experiments performed at Shenguang II facility need to measure the total energy of stimulated Raman scattering (SRS) and stimulated Brillouin scattering (SBS) as well as the weak backscattered SRS and SBS. Generally used laser calorimeter whose sensitivities are rather low, cannot meet the needs of such measurements. Because of long signal cable and AC power disturbance, simply boosting the amplifier gain will lead to the weak signal submerged by noise. Equipped with third order low pass active filters and software smooth filter, the multi channel bulk absorption laser calorimeter introduced in this paper, can significantly restrain the noise. Thus, the sensitivity of laser calorimeter can be greatly improved about two orders higher by means of boosting the amplifier gain than that of the normal type laser calorimeter. Using the new type laser calorimeter in the ICF experiments performed at Shenguang II facility, we obtained results different from that before. The experimental arrangement and the results are presented.

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