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Generation of Dual Wavelength and Dual Pulse in a Q-switched Cr: LiSAF Laser

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Abstract In this paper on flashlamp-pumped Cr: LiSAF laser system with a prism splitter to obtain dual pulse and dual wavelength laser output has been designed. The relation of laser output behaviors with input energy is studied experimentally. The time space of zero to 20 μs and the tunable range of 860 to 920 nm for each wavelength of the dual wavelength and dual pulse laser are obtained in experiments.

Key words Cr: LiSAF laser - prism splitter - dual wavelength - dual pulse

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\[ \text{Cr: LiSAF} \]

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Fig. 1 Experimental setup

\[ L = 80 \text{ mm} \times M_1 + M_2 = M_3 \times \frac{M_1 \times M_2 \times \Omega}{2} \times 5 \frac{\text{m} \times \text{mm}}{800 \text{ to } 920 \text{ nm}} \times \text{nm} \times \frac{R}{0.5 \%} \]

\[ \text{Cr: LiSAF, } \frac{1}{3} \text{ of } M_1, \frac{1}{3} \text{ of } M_2, \frac{1}{3} \text{ of } \Omega. \]

Fig. 2 Output energy \( E \) solid line and pulse width \( r \) dot line \( E \) versus the \( Q \) switching delay times.

\[ \begin{align*}
\text{Output energy } \begin{cases}
E = 200 \mu \text{J} \\
E = 200 \mu \text{J} \\
E = 200 \mu \text{J}
\end{cases}
\]

\[ \text{Input energy } J \]

Fig. 3 Output energy \( E \) solid line and pulse width \( r \) dot line \( E \) versus input energy.

\[ \begin{align*}
\text{Diagram of the time interval of two pulses:}
\end{align*} \]

\[ \begin{align*}
\text{Cr: LiSAF, } \frac{1}{3} \text{ of } M_1, \frac{1}{3} \text{ of } M_2, \frac{1}{3} \text{ of } \Omega.
\end{align*} \]
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