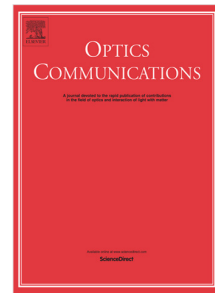


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Improvement of light storage efficiency using targetable optical pumping

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We report on improved light storage efficiency in a hot rubidium atomic vapor cell achieved using an additional pump field for optical pumping to a target state. When this targetable optical pumping is applied to light storage based on an electromagnetically induced transparency (EIT) configuration with orthogonal polarizations, the light storage efficiency increases to three times that of the EIT storage without optical pumping. The cause of this improvement in the light storage efficiency is targetable optical pumping to a specific Zeeman sub-state, which makes the pump field necessary in order to achieve a complete EIT scheme.

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Keywords: light storage, quantum memory, electromagnetically induced transparency

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