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标题: Long-lived field-free molecular orientation driven by modulated few-cycle terahertz pulses

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摘要: We present a theoretical scheme used for achieving an efficient long-lived field-free molecular orientation by utilizing two modulated few-cycle THz pulses with an appropriate delay time. The exact numerical calculations are performed by solving the time-dependent Schrodinger equation including the vibrational and rotational degrees of freedom, with the LiH molecule as an example. The results show that the orientation degree and the orientation duration are strongly related to the period of envelope T-p, the central frequency $\omega(L)$ and the phase of envelope ϕ of the modulated few-cycle THz pulses. A long-lived and efficient field-free molecular orientation can be realized by adjusting these laser parameters which is available in the current experiment. The effect of temperature on molecular orientation is also discussed. (C) 2012 Elsevier B.V. All rights reserved.

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