

Abstract Submitted
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Slow and fast light propagation in nonlinear Kerr media.¹

QIGUANG YANG, Dept. of Phys., Hampton Univ., Hampton, VA 23668 & Dept. of Phys., Lab. of Solid State Microstructure, Nanjing Univ., Nanjing, 200008, China, SEONGMIN MA, JAETAE SEO, BAGHER TABIBI, Department of Physics, Hampton University, Hampton, VA 23668, HUITIAN WANG, Department of Physics, Lab. of Solid State Microstructure, Nanjing University, Nanjing, 200008, China, S.S. JUNG, Korea Research Institute of Standards and Science, Daejeon, South Korea, 305-600 — Sub- and superluminal propagation of light pulse in Kerr materials has been investigated. Group velocities as slow as much less than 1 millimeter per second to as fast as negative several hundreds meters per second can be easily obtained in Kerr medium, which possesses large nonlinear refractive index and long relaxation time, such as Cr doped Alexandrite, Ruby, and GdAlO₃. The physical mechanism is the strong highly dispersive coupling between different frequency components of the pulse. The new mechanism of slowing down pulses as well as producing superluminal pulses enlarges the very specific materials to all kinds of nonlinear optical materials.

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Qiguang Yang
Dept. of Phys., Hampton Univ., Hampton, VA 23668
and Dept. of Phys., Lab. of Solid State Microstructure, Nanjing Univ.,
Nanjing, 200008, China

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