# Self-bending of light: comment

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We believe that the effect observed by Xing *et al.* [Opt. Lett. **18,** 479 (1993)] is essentially cross-phase modulation. It was inaccurately identified as self-bending of light, which is a self-action effect well known in the literature.

This Comment addresses an observed effect that we believe has been inaccurately identified by Xing *et al.*[1] The reported effect is not self-bending, as they suggested, but rather a cross-phase modulation effect. The self-bending effect[2] has, for 24 years, been defined as a degenerate process whereby a beam of wavelength $\lambda$ induces an intensity-dependent index change that deflects the trajectory of light (at $\lambda$) when the transverse intensity profile is triangular or asymmetric. In the first observation of self-bending[3] a wedge was used to achieve large beam deflections, reminiscent of the configuration of Xing *et al.*,[1] although in their case nanosecond pulses were used and anti-Stokes generation was not necessary. In fact, short pulses are not needed for self-bending to be demonstrated, as evidenced by the first cw measurements made in sodium vapor.[4] The effect observed by Xing *et al.* is attributed to cross-phase modulation of the anti-Stokes beam by the pump beam. This mechanism permits a strong pump beam to affect the propagation of light at another frequency (or polarization), as first reported in Ref. 5 and recently investigated in Ref. 6. The self-bending mechanism would require a high-intensity anti-Stokes beam (which was not reported in Ref. 1), whereas the cross-phase modulation would not.

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