

Polarization of vector solitons generated in break-up process in twisted fiber

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Abstract

We study experimentally the polarization of the radiation resulting from the pulse break-up process in a SMF-28 twisted fiber. The fiber twist causes circular birefringence and also mitigates the linear birefringence. The twisted fiber may be considered for nonlinear effect as fiber without linear birefringence, which allows the investigation of polarization properties which cannot be studied in common fibers because of the random residual birefringence. We found that the polarization of the formed solitons is more stable when the input pump polarization has elliptical polarization with big angle of ellipticity. At input polarization close to linear we observed that the polarization ellipticity angle tends to be higher than the polarization ellipticity angle of the input pump. The fluctuation of the polarization grows when the input polarization approaches to the linear.