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Baofeng Feng* (feng@utpa.edu). *An integrable coupled short pulse equation.*

An integrable coupled short pulse (CSP) equation is proposed for the propagation of ultra-short pulses in optical fibers. Based on two sets of bilinear equations to two-dimensional Toda-lattice (2DTL) linked by a Bäcklund transformation, and an appropriate hodograph transformation, the proposed CSP equation is derived. Meanwhile, its N -soliton solutions are given by Casorati determinant in parametric form. The properties of one- and two-soliton solutions are investigated in detail. Same as the short pulse equation, two-soliton solution turns out to be a breather type if the wave numbers are complex conjugate. We also illustrate an examples of soliton-breather interaction. (Received January 12, 2012)