Polarization Squeezing of Continuous Variable Stokes Parameters

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abstract We report the first direct experimental characterization of continuous variable quantum Stokes parameters. We generate a continuous wave light beam with more than 3 dB of simultaneous squeezing in three of the four Stokes parameters. The polarization squeezed beam is produced by mixing two quadrature squeezed beams on a polarizing beam splitter. Depending on the squeezed quadrature of these two beams the quantum uncertainty volume on the Poincaré sphere became a ‘cigar’ or ‘pancake’-like ellipsoid.