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Software defined down-hole telemetric systems: Training course

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Abstract

© 2015 SPIE. The paper is devoted for presentation of training course for applications and construction principles of poly-harmonic (two-frequency or four-frequency) cw laser systems for characterization of different nonlinear scattering effects in fibers and reflection of devices based on fiber Bragg gratings (FBG) in down-hole telemetric sensor nets, which are widely used in down-hole telemetric systems. In particular, we'll speak about evaluation of Mandelstam-Brillouin gain contour, Raman scattering contours and FBG reflection spectra characterization. Investigation methods and approaches are based on the unity of resonant structures of generated fiber responses on exciting and probing radiation or external physical fields for all given effects. The main decision is based on poly-harmonic probing of formed resonance responses. Training course united idea is software defined approach for down-hole parameters characterization in spite of measuring conversion principles.

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Keywords

Brillouin scattering, Down-hole measurement systems, Fiber Bragg grating, Fiber-optic distributed and quazi-distributed sensors, Raman scattering, Rayleigh scattering, Soft-ware defined approach, Training course