Modeling Noisy Light in Optical Fiber[1] ELIZABETH HUYNH, ANEL MEDRANO, ARTHUR ZAVALA, CHRISTOPHER GOEDDE, DePaul University — Light traveling in optical fiber can scatter off high-frequency sound waves in a process known as Brillouin scattering. The sound waves are randomly generated by thermal fluctuations in the fiber, and the amount of scattered light is strongly affected by these variations. Our model consists of three coupled partial differential equations, one for the input laser pulse, one for the scattered wave, and one for the sound waves. We present simulation results and compare them to experimental measurements of the statistics of light generated by Brillouin scattering in optical fiber.

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