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Imaging the signals emitted by multiple sources originating from a turbid medium GABRIEL CWILICH, Department of Physics, Yeshiva University, New York, USA, JUAN JOSE SAENZ, Departamento de Fisica de la Materia Condensada, Universidad Autonoma de Madrid, Spain , LUIS FROUFE PEREZ, Instituto de Estructura de la Materia, CSIC, Madrid, Spain — We studied the problem of spatially closely positioned sources which emit waves inside a turbid medium, through fluorescence or other mechanisms. While for many of the traditional imaging methods, including FRET, the disorder might impose an insurmountable obstacle for the detections of the sources, the interference of the waves in the case of multiple scattering, gives raise, due the coherent propagation of the signals at the mesoscopic scale , to important effects both in the correlations and the fluctuations of the intensity being detected at a point lying outside the medium. The information obtained that way can be used to monitor the displacement of the sources and their degree of coherence even at scales below the wavelength of the radiation being emitted.

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