On the multi-variate Talbot's effect

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I will outline some recent results in multi-variate Talbot's effect, an optical phenomenon of fractal self-imaging, which was experimentally discovered in 1836 by H. Talbot, the British inventor of photography. Mathematically, this group of effects reflects the fractal structure of the solutions of Helmholtz equation, with small parameter by the Laplacian, and the space periodic "initial data". These solutions are rather oscillatory, and physicists approximate them by solutions of Schroedinger equation.