

CHAPTER 3: LEVEL SET TECHNIQUES FOR STRUCTURAL INVERSION

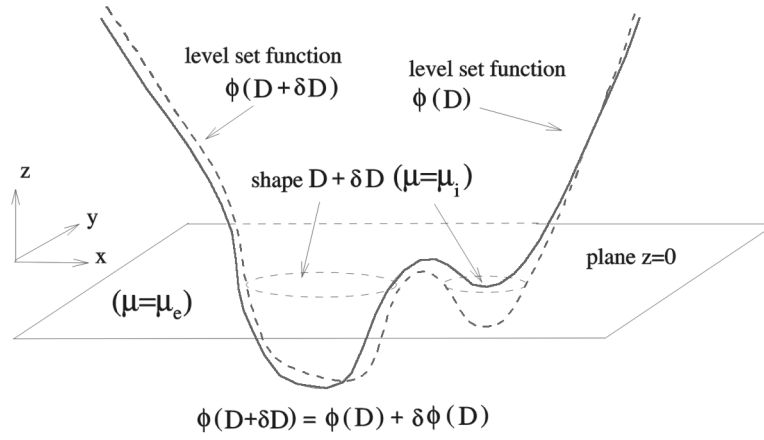


Figure 1. Deformation of shapes by the level set formulation.

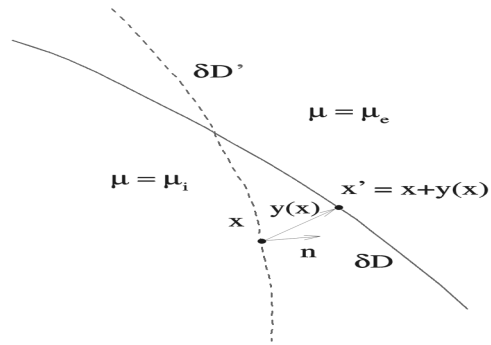


Figure 2. Deformation of shapes using calculation of small variations.

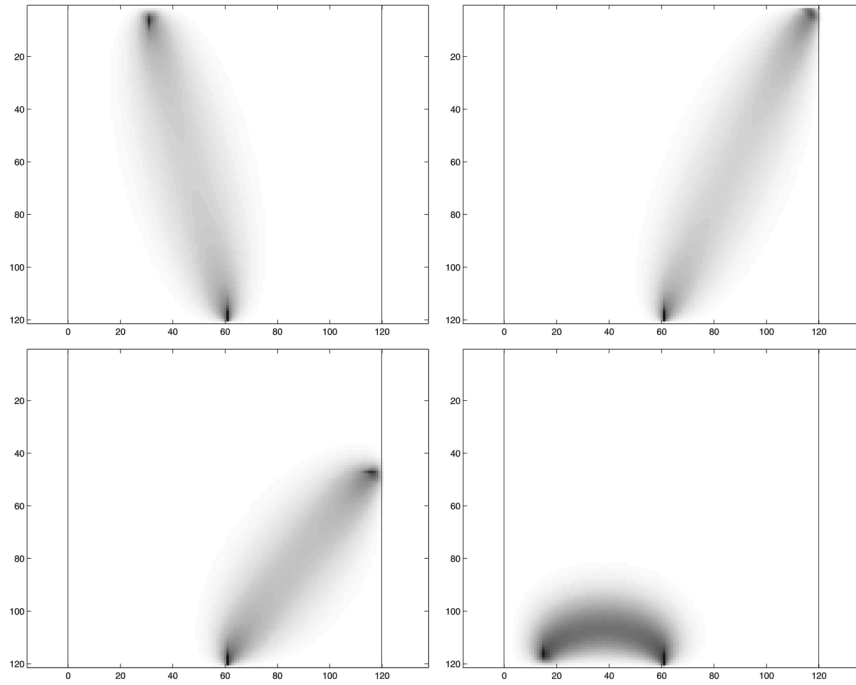


Figure 3. Numerically calculated sensitivity functions for four different source–receiver pairs and a fixed time step in diffuse optical tomography. Homogeneous background with $a = 0.1 \text{ cm}^{-1}$, $b = 100 \text{ cm}^{-1}$, and Henyey Greenstein scattering with $\gamma = 0.9$.

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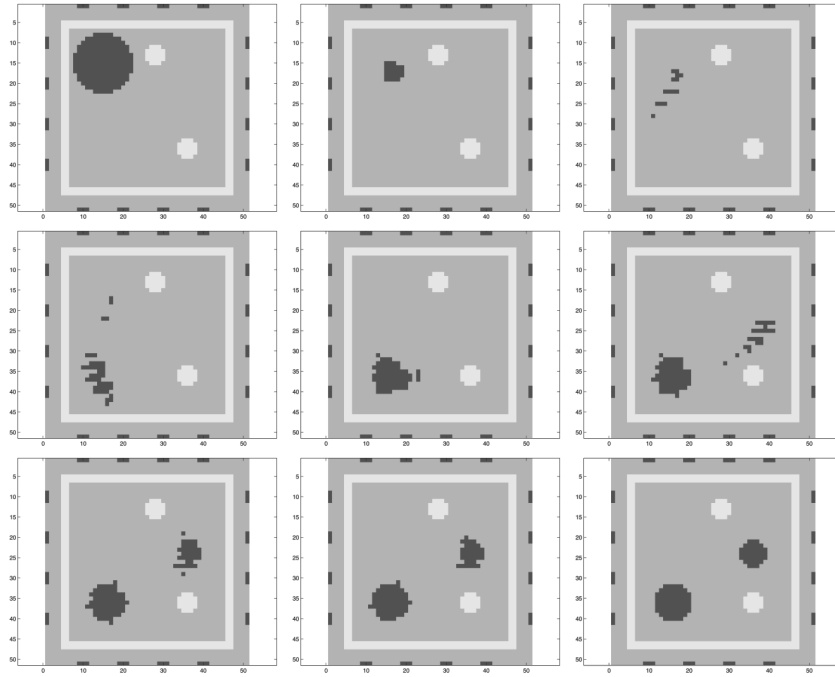


Figure 4. Shape evolution for the first example. Top row: first guess, after 2 and 14 iterations; center row: after 20, 80, and 130 iterations; bottom row: after 250 and 500 iterations; bottom right: true reference model. See also animated movie DOTmovie1 on this CD.

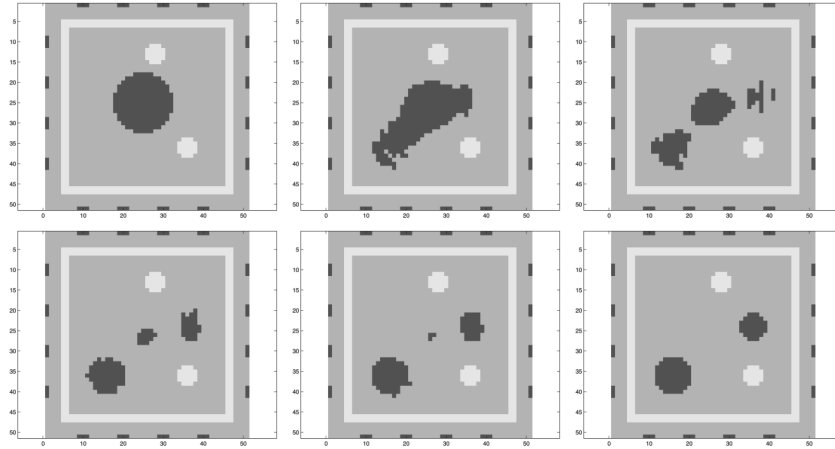


Figure 5. Shape evolution for the second example. Top row: first guess, after 10 and 40 iterations; bottom row: after 250 and 500 iterations; bottom right: true reference model. See also animated movie DOTmovie2 on this CD.

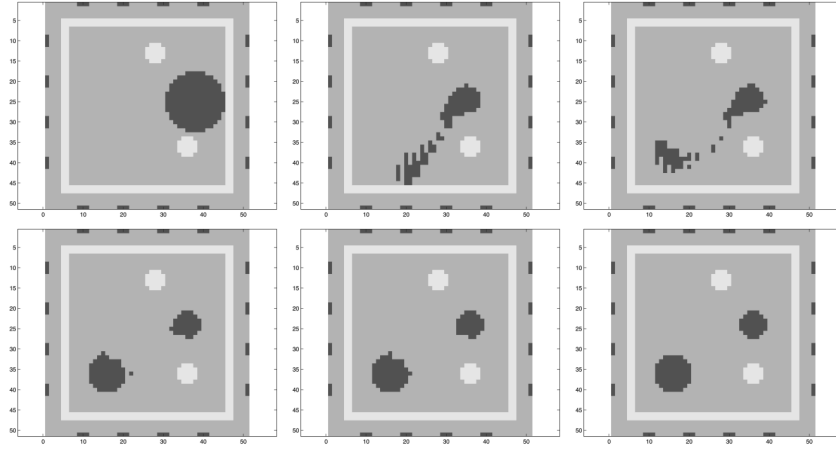


Figure 6. Shape evolution for the third example. Top row: first guess, after 30 and 35 iterations; bottom row: after 250 and 500 iterations; bottom right: true reference model. See also animated movie DOTmovie3 on this CD.

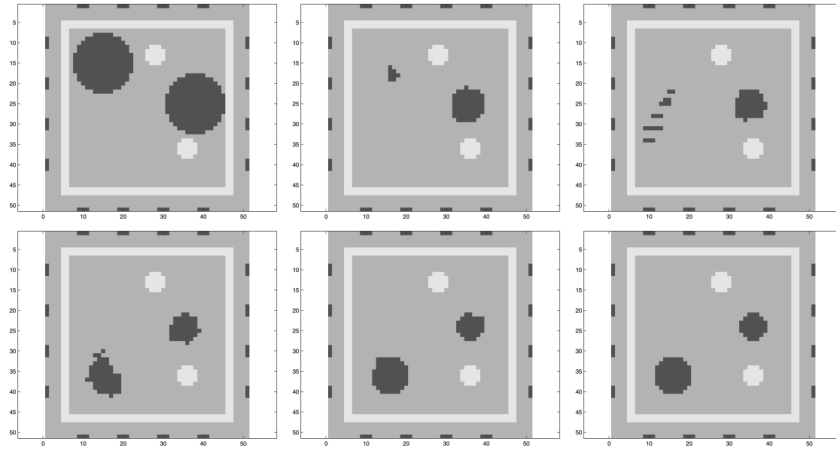


Figure 7. Shape evolution for the fourth example. Top row: first guess, after 4 and 10 iterations; bottom row: after 40 and 500 iterations; bottom right: true reference model. See also animated movie DOTmovie4 on this CD.

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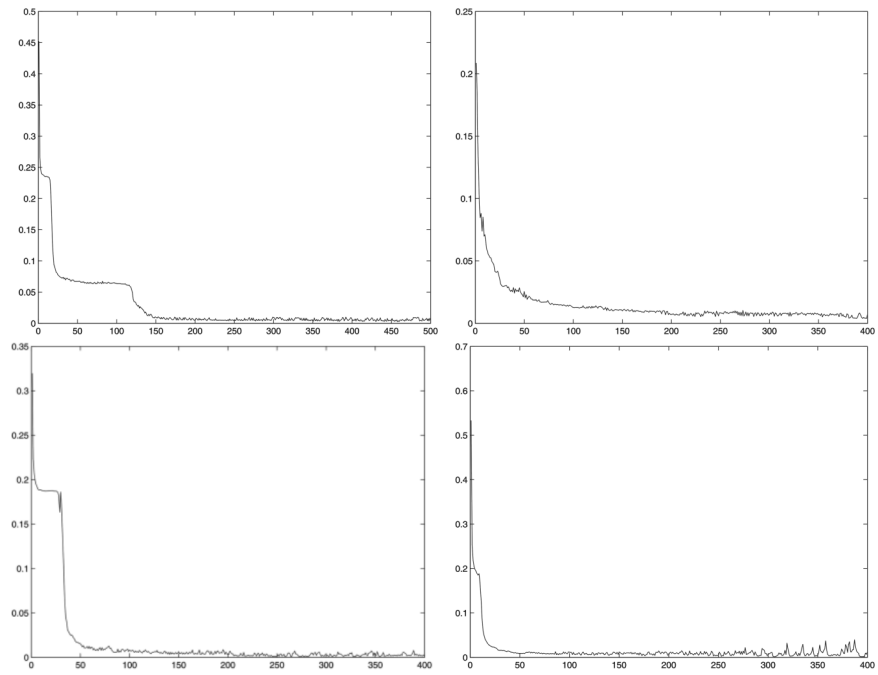


Figure 8. Evolution of least-squares data misfit. Top left: first example (Fig. 4); top right: second example (Fig. 5); bottom left: third example (Fig. 6); bottom right: fourth example (Fig. 7).