References

[1] Alifanov, O.M.: Solution of an inverse problem of heat conduction by iteration methods. J. of Engineering Physics 26, 471–476 (1974)

[2] Alifanov, O.M., Mikhailov, V.V.: Solution of the nonlinear inverse thermal conductivity problem by iteration method. J. of Engineering Physics 35, 1501–1506 (1978)

[3] Alvarez Acevedo, N.I., Roberty, N.C., Silva Neto, A.J.: An explicit formulation for the inverse transport problem using only external detectors. Part I: Computational modelling. Computational & Applied Mathematics 29(3), 343–358 (2010)

[4] Alvarez Acevedo, N.I., Roberty, N.C., Silva Neto, A.J.: An explicit formulation for the inverse transport problem using only external detectors. Part II: Application to one-dimensional homogeneous and heterogeneous participating media. Computational & Applied Mathematics 29(3), 359–374 (2010)

[5] Andrews, R., Seidel, M., Biggs, M. (eds.): The Columbia World of Quotations. Columbia University Press, New York (1996)

[6] ANS. Joint International Conference on Mathematical Methods and Supercomputing for Nuclear Applications – special technical session on inverse and ill-conditioned problems. American Nuclear Society (1997)

[7] Arnold, V.I.: On teaching mathematics. Extended text of the address at the discussion on teaching of mathematics in Palais de Découverte in Paris (March 7, 1997), http://pauli.uni-muenster.de/~munsteg/arnold.html (accessed on June 6, 2011)

[8] ASME. First International Conference on Inverse Problems in Engineering: Theory and Practice (1993)

[9] Barbour, R.L., Carvlin, M.J., Fiddy, M.A.: Experimental and numerical methods for solving ill-posed inverse problems: medical and nonmedical applications. SPIE – The International Society for Optical Engineering (1995)

[10] Beck, J.V.: Combined parameter and function estimation in heat transfer with applications to contact conductance. Journal of Heat Transfer 110(4b), 1046–1058 (1988)

[11] Beck, J.V., Blackwell, B., Clair Jr., C.R.S.: Inverse heat conduction — Ill-posed problems. John Wiley & Sons (1985)

[12] Bejan, A.: Heat Transfer. John Wiley & Sons (1993)

[13] Bennett, A.F.: Inverse methods in physical oceanography. Cambridge Monographs on Mechanics and Applied Mathematics, Cambridge (1992)

[14] Bregman, L.M.: The relaxation method of finding the common point of convex sets and its application to the solution of problems in convex programming. USSR Computational Mathematics and Mathematical Physics 7, 200–217 (1967)

[15] do Carmo, M.P.: Differential geometry of curves and surfaces. Prentice-Hall Inc. (1976)

[16] Carita Montero, R.F., Roberty, N.C., Silva Neto, A.J.: Absorption coefficient estimation in heterogeneous media using a domain partition consistent with divergent beams. Inverse Problems in Engineering 9, 587–617 (2001)

[17] Carvalho, G., Frollini, E., Santos, W.N.: Thermal conductivity of polymers by hot-wire method. Journal of Applied Polymer Science 62, 2281–2285 (1996)

[18] Carvalho, G., Silva Neto, A.J.: An inverse analysis for polymers thermal properties estimation. In: Proc. 3rd International Conference on Inverse Problems in Engineering: Theory and Practice (1999)

[19] Chalhoub, E.S., Campos Velho, H.F., Silva Neto, A.J.: A comparison of the one-dimensional radiative transfer problem solution obtained with the Monte Carlo method and three variations of the discrete ordinates method. In: Proc. 19th International Congress of Mechanical Engineering. ABCM, Brasília (2007)

[20] Chandrasekhar, S.: On the radiative equilibrium of a stellar atmosphere, II. Astrophys. J. 100, 76–86 (1944)

[21] Chandrasekhar, S.: Radiative transfer. Dover (1960)

[22] Tables of angular distribution coefficients for light scattering by spheres. University of Michigan Press, Ann Arbor (1957)

[23] Ciarlet, P.G.: Introduction to numerical linear algebra and optimization. Cambridge University Press, Cambridge (1989)

[24] Cidade, G.A.G.: Development of methodologies for biological images acquisition and processing in atomic force microscope (AFM). D. Sc. Thesis, Institute of Biophysics Carlos Chagas Filho. Federal University of Rio de Janeiro (2000) (in Portuguese)

[25] Cidade, G.A.G., Anteneodo, C., Roberty, N.C., Silva Neto, A.J.: A generalized approach for atomic force microscopy image restoration with Bregman distances as Tikhonov regularization terms. Inverse Problems in Engineering 8, 457–472 (2000)

[26] Cidade, G.A.G., Costa, L.T., Weissmüller, G., Silva Neto, A.J., Roberty, N.C., Moraes, M.B., Prazeres, G.M.P., Hill, C.E.M., Ribeiro, S.J.M., Souza, G.G.B., Teixeira, L.S.P., Monçores, M.C., Bisch, P.M.: Atomic force microscopy as a tool for biomedical and biotechnological studies. Artificial Organs 27(5), 447–451 (2003)

[27] Cidade, G.A.G., Silva Neto, A.J., Roberty, N.C.: Image restoration with applications in biology and engineering — Inverse problems in nanoscience and nanotechnology, São Carlos, Brazil. SBMAC (Brazilian Society of Computational and Applied Mathematics). Notes in Applied Mathematics, vol. 1 (2003) (in Portuguese)

[28] Darcy, H.: Les Fontaines Publiques de la Ville de Dijon. Dalmont, Paris (1856)

[29] Denisov, A.M.: Elements of the theory of inverse problems. VSP BV, The Nederlands (1999)

[30] Engl, H.W., Hanke, M., Neubauer, A.: Regularization of inverse problems. Kluwer Academic Publishers (1996)

[31] Engl, H.W., Rundell, W.: Inverse problems in diffusion processes. GAMM-SIAM (Gesellschaft für Angewandte Mathematik und Mechanik Regensburg – US Society for Industrial and Applied Mathematics) (1994)

[32] Feynmann, R.: The character of physical law. MIT Press, Cambridge (1964)

[33] Flach, G.P., Özisik, M.N.: Inverse heat conduction problem of simultaneously estimating spatially varying thermal conductivity and heat capacity per unit volume. Numer. Heat Transfer 16, 249–266 (1989)

[34] Gallant, A.R.: Nonlinear statistical models. Wiley (1987)

[35] Golub, G.H., Van Loan, C.F.: Matrix computations. The Johns Hopkins University Press (1989)

[36] Gordon, C., Webb, D.L., Wolpert, S.: One cannot hear the shape of a drum. Bull. Amer. Math. Soc. 27(1), 134–138 (1992)

[37] Hestenes, M.R., Stiefel, E.: Methods of conjugate gradients for solving linear systems. Journal of Research of the National Bureau of Standards 49(6), 409–436 (1952)

[38] Ho, C.H., Özisik, M.N.: An inverse radiation problem. International Journal of Heat and Mass Transfer 32(2), 335–341 (1989)

[39] John, F.: Partial Differential Equations. Springer (1982)

[40] Kac, M.: Can one hear the shape of a drum? Am. Math. Monthly 73(4, pt. II), 1–23 (1966)

[41] Kanitz, S.: Stimullating creativity Veja, Editora Abril, São Paulo 1826 (October 29, 2003) (in Portuguese), http://veja.abril.com.br/acervodigital/home.aspx

[42] Kapur, J.N., Kesavan, H.K.: Entropy Optimization Principles with Applications. Academic Press, Inc. (1992)

[43] Keller, J.: Inverse problems. Am. Math. Mon. 73, 1–23 (1966)

[44] Kirsch, A.: An introduction to the mathematical theory of inverse problems. Springer (1996)

[45] Knupp, D.C., Silva Neto, A.J., Sacco, W.F.: Radiative properties estimation with the particle collision algorithm based on a sensitivity analysis. High Temperatures — High Pressures 38(2), 137–151 (2009)

[46] Lobato, F.S., Steffen Jr., V., Silva Neto, A.J.: A comparative study of the application of differential evolution and simulated annealing in inverse radiative transfer problems. Journal of the Brazilian Society of Mechanical Sciences and Engineering XXXII(5), 518–526 (2010)

[47] Lobato, F.S., Steffen Jr., V., Silva Neto, A.J.: Self-adaptive differential evolution based on the concept of population diversity applied to simultaneous estimation of anisotropic scattering phase function, albedo and optical thickness. Computer Modeling in Engineering & Sciences 69(1), 1–18 (2010)

[48] Lobato, F.S., Steffen Jr., V., Silva Neto, A.J.: Resolution of inverse problems in diffusive processes and radiative transfer using the differential evolution algorithm. In: Lopes, H.S., Takahashi, R.H.C. (eds.) Evolutionary Computation in Engineering Problems, ch. 9, pp. 173–195. Omnipax Ed. Ltda, Curitiba (2011)

[49] Lugon Jr., J., Silva Neto, A.J.: Solution of porous media inverse drying problems using a combination of stochastic and deterministic methods. Journal of the Brazilian Society of Mechanical Sciences and Engineering XXXIII(4), 400–407 (2011)

[50] Lugon Jr., J., Silva Neto, A.J., Biondi Neto, L., Soeiro, F.J.C.P., Santana, C.C., Campos Velho, H.F.: Application of artificial neural networks and hybrid methods in the solution of inverse problems. In: Artificial Neural Networks - Application, ch. 26, pp. 541–566. InTech (2011)

[51] Lugon Jr., J., Silva Neto, A.J., Santana, C.C.: A hybrid approach with artificial neural networks, Levenberg-Marquardt and simulated annealing methods for the solution of gas-liquid adsorption inverse problems. Inverse Problems in Science and Engineering 11(5), 391–408 (2003)

[52] Lugon Jr., J., Silva Neto, A.J., Rodrigues, P.P.G.W.: Assessment of dispersion mechanisms in rivers by means of an inverse problem approach. Inverse Problems in Science and Engineering 16(8), 967–979

[53] Marsden, J.E., Hoffman, M.: Elementary Classical Analysis, 2nd edn. W.H. Freeman (1993)

[54] Marquardt, D.W.: An algorithm for least-squares estimation of nonlinear parameters. J. Soc. Industr. Appl. Math. 11, 431–441 (1963)

[55] Montgomery, D.C., Runger, G.C.: Applied statistics and probability for engineers. John Wiley & Sons (1994)

[56] Moura Neto, F.D., Melo, S.T.R.: Darcy's law for a heterogeneous porous medium. Journal of Porous Media 4(2), 165–178 (2001)

[57] Moura Neto, F.D., Silva Neto, A.J.: Solution of the one-dimensional transport equation with operator splitting and integrating factor. In: Proc. 15th Brazilian Congress of Mechanical Engineering. ABCM, Águas de Lindóia (1999) (in Portuguese)

[58] Moura Neto, F.D., Silva Neto, A.J.: Two equivalent approaches to obtain the gradient in algorithms for function estimation. In: 34th National Heat Transfer Conference, Pittsburgh (2000)

[59] Myers, R.H., Montgomery, D.C., Vining, G.G.: Generalized Linear Models with Applications in Engineering and the Sciences. John Wiley & Sons, New York (2002)

[60] Özisik, M.N.: Radiation transfer and interactions with conduction and convection. John Wiley (1973)

[61] Özisik, M.N.: Boundary Value Problems of Heat Conduction. International Textbook Co., Scranton (1968)

[62] Philippi Jr., A., Silva Neto, A.J. (eds.): Interdisciplinarity in science, technology and innovation. Manole, São Paulo (2011) (in Portuguese)

[63] Pinheiro, R.P.F., Silva Neto, A.J., Moura Neto, F.D.: Operator splitting techniques for radiative transfer in a participating medium. In: Proc. 5th World Congress on Computational Mechanics, Vienna, Austria (2002)

[64] Polak, E.: Computational methods in optimization. Academic Press (1971)

[65] Protter, M.H.: Can one hear the shape of a drum? Revisited. SIAM Rev. 29(2), 185–197 (1987)

[66] Reed, M., Simon, B.: US Methods of modern mathematical physics, vol. 1. Academic Press (1972)

[67] Shewchuck, J.R.: An Introduction to the Conjugate Gradient Method Without the Agonizing Pain, http://www.cs.cmu.edu/ quake-papers/painless-conjugate-gradient.pdf (accessed June 6, 2011)

[68] Silva Neto, A.J.: Explicit and implicit formulations for inverse radiative transfer problems. In: Proc. 5th World Congress on Computational Mechanics, Mini-Symposium MS-125-Computational Treatment of Inverse Problems in Mechanics (2002)

[69] Silva Neto, A.J., Becceneri, J.C. (eds.): Nature inspired computational intelligence techniques — application in inverse radiative transfer problems, São Carlos, Brazil. SBMAC (Brazilian Society of Computational and Applied Mathematics). Notes in Applied Mathematics, vol. 41 (2009) (in Portuguese)

[70] Silva Neto, A.J., Cella, N.: A regularized solution with weighted Bregman distances for the inverse problem of photoacoustic spectroscopy. Computational & Applied Mathematics 25, 139–165 (2006)

[71] Silva Neto, A.J., Lugon Jr., J., Soeiro, F.J.C.P., Biondi Neto, L., Santana, C.C., Lobato, F.S., Steffen Jr., V.: Application of simulated annealing and hybrid methods in the solution of inverse heat and mass transfer problems. In: Simulated Annealing, Theory with Applications, ch. 2, pp. 17–50. Sciyo (2010)

[72] Silva Neto, A.J., McCormick, N.J.: An explicit formulation based on the moments of the exit radiation intensity for the one-dimensional inverse radiative transfer problem. In: Proc. 4th International Conference on Inverse Problems in Engineering: Theory and Practice, Angra dos Reis, Brazil, vol. II, pp. 347–354 (2002)

[73] Silva Neto, A.J., Moura Neto, F.D., Su, J.: Function estimation with the conjugate gradient method in linear and nonlinear heat conduction problems. In: Proc. 15th Brazilian Congress of Mechanical Engineering. ABCM, Águas de Lindóia (1999)

[74] Silva Neto, A.J., Özisik, M.N.: An inverse problem of estimating thermal conductivity, optical thickness, and single scattering albedo of a semi-transparent medium. In: First International Conference on Inverse Problems in Engineering: Theory and Practice, pp. 267–273. ASME (1993)

[75] Silva Neto, A.J., Özisik, M.N.: Estimation of refractive index and optical thickness for a semi-transparent medium in radiative equilibrium. In: Proc. 12th Brazilian Congress of Mechanical Engineering, vol. II, pp. 665–668 (1993)

[76] Silva Neto, A.J., Özisik, M.N.: Inverse problem of simultaneously estimating the timewise-varying strength of two plane heat sources. Journal of Applied Physics 73(5), 2132–2137 (1993)

[77] Silva Neto, A.J., Özisik, M.N.: Simultaneous estimation of location and timewise varying strength of a plane heat source. Numer. Heat Transfer, Part A: Applications 24, 467–477 (1993)

[78] Silva Neto, A.J., Özisik, M.N.: The estimation of space and time dependent strength of a volumetric heat source in a one-dimensional plate. Int. J. Heat and Mass Transfer 37(6), 909–915 (1994)

[79] Silva Neto, A.J., Özisik, M.N.: An inverse problem of simultaneous estimation of radiation phase function, albedo and optical thickness. J. Quant. Spectrosc. Radiat. Transfer 53(4), 397–409 (1995)

[80] Silva Neto, A.J., Roberty, N.C.: A comparison of the discrete ordinates method with other techniques for the solution of the one-dimensional transport equation. In: Proc. 7th Brazilian Congress of Engineering and Thermal Sciences, vol. II, pp. 878–883. Rio de Janeiro, Brazil (1998) (in Portuguese)

[81] Silva Neto, A.J., Roberty, N.C., Pinheiro, R.P.F., Alvarez Acevedo, N.I.: Inverse problems explicit and implicit formulations with applications in engineering, biophysics and biotechnology. Inverse Problems in Science and Engineering 15(4), 373–411 (2007)

[82] Strang, G.: Linear algebra and its applications, 3rd edn. Academic Press (1988)

[83] Strang, G.: Computational Science and Engineering. Wellesley Cambridge Press (2007)

[84] Stutz, D.: Parallel computation strategies for image restoration with Tikhonov's regularization functional. D.Sc. Thesis. Computational Modelling Program. Polytechnique Institute. Rio de Janeiro State University (2009) (in Portuguese)

[85] Stutz, D., Silva Neto, A.J.: Parallel computing fundamentals for atomic force microscopy image restoration, São Carlos, Brazil. SBMAC (Brazilian Society of Computational and Applied Mathematics). Notes in Applied Methematics, vol. 56 (2011) (in Portuguese)

[86] Stutz, D., Silva Neto, A.J., Cidade, G.A.G.: Parallel computation approach for the restoration of AFM images based on the Tikhonov regularization method. Microscopy & Microanalysis 11(suppl. S03), 22–25 (2005)

[87] Su, J., Silva Neto, A.J.: Two-dimensional inverse heat conduction problem of source strength estimation in cylindrical rods. Applied Mathematical Modelling 25, 861–872 (2001)

[88] Tikhonov, A.N., Arsenin, V.Y.: Solutions of ill-posed problems. V. H. Winston & Sons, Washington, D.C (1977)

[89] Vasconcellos, J.F.V., Silva Neto, A.J., Santana, C.C.: An inverse mass transfer problem in solid-liquid adsorption systems. Inverse Problems in Engineering 11(5), 391–408 (2003)

[90] Veríssimo, L.F.: Glories. O Estado de São Paulo (January 5, 2008), http://www.estadao.com.br/noticias/impresso,glorias,104819,0.html (in Portuguese)

[91] Vega, J.A.: Ingeneria de la producción y transformación de polímeros. Instituto de Plásticos y Caucho (1984)

[92] Wang, J., Silva Neto, A.J., Moura Neto, F.D., Su, J.: Function Estimation with Alifanov's Iterative Regularization Method in Linear and Nonlinear Heat Conduction Problems. Applied Mathematical Modelling 26(11), 1093–1111 (2002)

[93] Wick, G.C.: Über ebene Diffusionsprobleme. Z. Phys. 121(11-12), 702–718 (1943)

[94] Wigner, E.: The Unreasonable Effectiveness of Mathematics in the Natural Sciences. Communications in Pure and Applied Mathematics 13(I) (1960)