THE UNIVERSITY OF TEXAS AT AUSTIN
College School of Engineering
Resume

FULL NAME: **Ivo M. Babuška**   **TITLE:**   **Professor**

ENDOWED POSITION: Robert B. Trull Chair in Engineering

DEPARTMENT: **Aerospace Engineering and Engineering Mechanics**

EDUCATION:

Technical University	Civil Engineering	Dipl. Ing.	1949
Technical University	Technical Science	Dr. (Ph.D.)	1951
Czechoslovak Academy Mathematical and Physical Sciences	C. Sc. (Ph.D).	1955
Czechoslovak Academy Mathematical and Physical Sciences	Dr. Sc. (D.Sc.)	1960

Note: In 1953, the academic law was changed in Czechoslovakia. A two-level system was created as in the Soviet Union. The Dr. of Technical Science (1951) represents a Ph.D. in Engineering and the C. Sc. represents a Ph.D. in Mathematics. The degree of Dr. Sc. was the highest scientific degree granted, being given to about one in twenty of the Ph.D. holders. The Dr. Sc. was granted by the Presidium of the Academy of Sciences to scientists of International reputation.

PROFESSIONAL REGISTRATION: Not Registered

CURRENT AND PREVIOUS ACADEMIC POSITIONS:
Mathematical Institute of the Czechoslovak Academy of Sciences, Aspirant of Mathematics, 1949-52
Mathematical Institute of the Czechoslovak Academy of Sciences, Research Fellow, 1951-55
Mathematical Institute of the Czechoslovak Academy of Sciences, Department Head, 1955-68
University of Maryland at College Park, Distinguished Professor, 1968-95
The University of Texas at Austin, Robert Trull Chair in Engineering, TICAM Senior Research Scientist,
    Professor of Aerospace Engineering and Engineering Mechanics, and Professor of Mathematics, 1995-present,
    50% retired by September 1, 2000.

EDITORIAL BOARDS:
Communications in Applied Analysis, An International Journal for theory & Applications, Sofia, Bulgaria.
Computer Methods in Applied Mechanics and Engineering, North-Holland Publishing Company, Amsterdam, The
    Netherlands.
International Journal for Numerical Methods in Engineering, John Wiley & Sons, Chichester, New York,
    Brisbane, Toronto, Singapore.
Numerical Mathematics - A Journal of Chinese Universities - English Series, Beijing, People's Republic of China.
Numerical Methods for Partial Differential Equations, John Wiley & Sons, New York, Chichester, Brisbane,
    Toronto, Singapore.

PROFESSIONAL SOCIETY AND MAJOR GOVERNMENTAL COMMITTEES, EDITORIAL BOARDS, AND CONFERENCES ORGANIZED/CHAIRED:
 Honorary editor of various journals

HONORS AND AWARDS:
Winner of the Czechoslovak State Prize for Mathematics 1968
Humboldt Senior U.S. Scientist Award of Federal Republic of Germany 1976
Adjunct Professor, Shanghai University of Science and Technology, People's Republic of China 1982
Sigma Xi Achievement Award for Contribution to Science, University of Maryland Chapter 1984
Conference to Commemorate 60th Birthday, The Impact of Mathematical Analysis on the Solution of Engineering
    Problems, University of Maryland, September 17-19, 1986
Numerische Mathematik, Volume 53, Fasc. 1/2, 1-254, July 1988, dedicated to Ivo Babuška on his Sixtieth
    Birthday
Medal: Charles University, Prague, Czechoslovakia 1992
Medal: For Merit in the Development of Mechanics, 1993, Czech Society for Mechanics, Prague, Czech Republic
Birkhoff Prize: American Mathematical Society and Society for Industrial and Applied Mathematics 1994

Doctor of Science (Hon DSc), University of Westminster, London, England 1994
Distinguished University Professor, University of Maryland 1995
J. von Neumann Medal, U.S. Association for Computational Mechanics 1995
Robert Trull Professor, University of Texas at Austin 1995
Distinguished University Professor Emeritus, University of Maryland 1996
Conference to Commemorate 70th Birthday, Engineering Problems: Mathematical Formulation, Analysis, and
     Computational Treatment, University of Maryland, March 21-24, 1996
Conference to Commemorate 70th Birthday, Prague Mathematical Conference, Prague, Czech Republic, July 8-
     12, 1996.
Doctor of Sciences Honouris Causa, Brunel University, United Kingdom, 1996
Honorary Member of the Association of Czech Mathematicians and Physicists, 1996
Commemorative Medal of the Association of Czech Mathematician and Physicists for Merits in Development of
     Mathematics and Physics, 1996
Bolzano Medal, Czech Academy of Sciences, 1996
Doctor of Sciences Honouris Causa, Charles University, Prague, Czech Republic, 1997
Fellow of US Association of Computational Mechanics, 1997
Honorary Foreign Member of Czech Learned Society, 1998: in the Czech Republic there are three academies for
     natural sciences called Learned Society, Academy of Engineering, and Academy of Medical Sciences
Honorary Doctorate, Helsinki University of Technology, 2000
Honorary editor of the Journal Application of Mathematics 2001
Fellow of the International Association of Computational Mechanics, 2002.
Member of European Academy of Sciences 2003.
Reprinting the paper from SINUM in SIGEST section of SIAM Review 41, 2000, No.3.
Honorary editor of the Journal Numerishe Mathematik., 2003.
Asteroid 36060 was named Babuška, 2003.
Honorary editor of the "International Journal of Numerical Analysis and Modeling", 2003.
Honorary editor of the "International Journal of Computational Methods". 2003
Fellow of the "World Innovation Foundation", 2004.
Member, National Academy of Engineering, 2005.
Member, The Academy of Medicine, Engineering and Science of Texas, 2005.
Honorary Diploma of Czech Society of Mechanics, 2005.
Nine minisymposia held in honor of Ivo Babuška during 8th U.S. National Congress on Computational
Mechanics, July 24-28, 2005, Austin, Texas; also birthday dinner in honor of 80th birthday held on July 24 with
     over 150 invited guests
Medal de Scientia Humanitate Optime Meritis – Academy of Sciences, Czech Republic, October 2005.
Conference MAFELAP 06 (Conference on the Mathematics of Finite Elements and Applications) June 13-16,
     2006, Brunel University, UK was dedicated to honor 80th birthday.
The Babuška Lecture of MAFELAP was established.
International Conference: Program of Algorithms of Numerical Mathematics 13 in honor of the 80th birthday,
     Prague, May 28-31, 2006.
ICAM Congress Medal (Newton Gauss), July 2006.
Medal Quicumque Homo Natus Est Hominem Agere Discat – Education Ministry of Czech Republic, May 2006
Honorary doctorate of Czech Technical University, 2007.
Honorary article in IACM Expressions on receipt of Newton-Gauss Medal, Vol 7, June 2007, pp. 38-39.
Member, Engineering Academy of Czech Republic, 2007
Listed in Thomson Reuters Highly Cited Research, The People Behind the Most Influential Research, 2000-2008.
Selected Fellow, Society for Industrial and Applied Mathematics, for outstanding contributions to the fields served
     by SIAM, April 2009
Leroy P. Steele Prize for Lifetime Achievement, American Mathematical Society, January, 2012.
Neuron Prize, Czech Republic, December, 2014

PUBLICATIONS:

Refereed Journal Publications
1. Babuška, I., "Welding stresses and deformations," *Strojirenstvi*, <u>Czech</u>, No. 3, 1952.
2. Babuška, I., "Plane elasticity problem", *Casopis Pest. Mat.*, <u>Czech</u>, No. 3, 0227-241, 1952.
3. Babuška, I., "A contribution to the theoretical solution of welding stresses and some experimental results," *Svarecsky Sbornik*, <u>Czech</u>,181-207, 1953.
4. Babuška, I., "Solution of the elastic problem of a halfplane loaded by a sequence of singular forces," *Casopis Pest. Mat.*, <u>Czech</u>, 278-280, 1954.
5. Babuška, I., "A contribution to one method of solution of the biharmonic problem," *Casopis* Pest. Mat., <u>Czech</u>,41-63, 1954.
6. Babuška, I., and L. Mejzlik, "The stresses in a gravity dam on a soft bottom," *Vodni hospodarstvi*, <u>Slovak</u>, 231-236, 258-264, 1954.
7. Babuška, I., "On plane biharmonic problems in regions with corners," *Casopis Pest. Mat.*, <u>Czech</u>, 448-453, 1955.
8. Babuška, I, and L. Mejzlik , "The method of finite differences for solving of problems of partial differential equations, "*Casopis Pest. Mat.*, <u>Czech</u>, 431-458, 1955.
9. Babuška, I, "Numerical solution of complete regular systems of linear algebraic equations and some applications in the theory of frameworks," *Casopis Pest. Mat.*, <u>Czech</u>, 60-80, 1955.
10. Babuška, I., "On a property of harmonic functions," *Czechoslovak Math. J.*, <u>Russian</u>, 220-233, 1955.
11. Babuška, I., "The solution of a biharmonic problem in the infinite strip," *Apl. Mat.*, <u>Czech</u>, 34-43, 1956.
12. Babuška, I., "Algorithm of Schwarz in the partial differential equations of mathematical physics," *ZAMM*, <u>German</u>, H. 7/8, 1957.
13. Babuška, I., "The stress in an inhomogeneous medium," *Apl. Mat.*, <u>Czech</u>, 361-370, 1957.
14. Babuška, I., "The rheology of concrete," *Stavebnicky Casopis*, <u>Czech</u>, 28-42, 1958.
15. Babuška, I., "Algorithm of Schwarz in the partial differential equations of mathematical physics," *Czechoslovak Math. J.*, <u>Russian</u>, 328-343, 1958.
16. Babuška, I., and L. Mejzlik, "The analysis of the possibility of the building of a gravity dam by the method of high concrete layers," *Acta Tech.*, <u>German</u>, 353-398, 1958.
17. Babuška, I., and L. Mejzlik , "The thermal stresses in gravity dams and the method of high speed building*", Inz. Stavby*, <u>Czech</u>, 515-521, 1958.
18. Babuška, I., and R. Vyborny, "The existence and uniqueness of the Dirichlet problem on general regions," *Czechoslovak Math. J.*, <u>German</u>,130-153, 1959.
19. Babuška, I., "The linear theory of intrinsic friction. The theory of periodic vibrations with one degree of freedom. I, II," *Apl. Mat.*, <u>Russian</u>, 177-202, 1959; 371-380, 1960.
20. Babuška, I., "The nonlinear theory of intrinsic friction," *Apl. Mat.*, <u>German</u>, 303-321, 1959.
21. Babuška, I., and M. Fiedler, "The system of linear equations of the type arising in frameworks" *Apl. Mat.*, <u>German</u>, 441-455, 1959.
22. Babuška, I., "The Fourier transform in the theory of difference equations and its applications," *Arch. Mech. Stos.*, 349-381, 1959.
23. Babuška, I., "The continuity of the solutions of elasticity problems on small deformation of the region," *ZAMM*, <u>German</u>, 411-412, 1959.
24. Babuška, I., E. Vitasek, and F. Kroupa, "Some applications of the discrete Fourier transform to problems of crystal lattice deformation," I, II, *Czechoslovak J. Phys.*, <u>Czech</u>, 419-427, 488-504, 1960.
25. Babuška, I., L. Mejzlik and E. Vitasek, "On the problems of artificial cooling of the concrete of massive dams,*" Acta Tech.*, <u>German</u>, 109-140, 1960.
26. Babuška, I., "Note on the theory of the rail," *Arch. Mech. Stos.*, 305-311, 1960.
27. Babuška, I., and M. Prager, "Reissnerian algorithms in the theory of elasticity*," Bull. Acad. Polon. Sci. Ser. Sci. Tech.*, 411-417, 1960.
28. Babuška, I., and V. Kolousek, "The linear theory of intrinsic friction during the vibration of elastic systems, *"Sb. Stroj. Mech. Moskovsky Institut Inz. zeleznodoroz. transporta*, <u>Russian</u>,57-88, 1961.
29. Babuška, I. and E. Vitasek, "The Wiener-Hopf technique in the theory of difference equations I, II, III,*" Arch. Mech. Stos.*, 3-21, 457-469; 83-91, 1962.
30. Babuška, I., "The stability of the domain of definition with respect to basic problems of the theory of partial differential equations, especially with respect to the theory of elasticity I, II," *Czechoslovak Math. J.,* <u>Russian</u>, 76-105, 165-203, 1961.
31. Babuška, I., "The Fourier transformation in difference equations in countable normed spaces and some applications," *Casopis Pest. Mat.*, <u>German</u>, 462-479, 1961.
32. Babuška, I., "Random solution of the rail problem," *Arch. Mech. Stos.*, 367-375, 1961.
33. Babuška, I., "On randomized solution of Laplace's equation", *Casopis Pest. Mat.*, 86 269-276, 1961.
34. Babuška, I., and J. Kautsky, "A contribution to notch stress concentration," *ZAMM*, <u>German</u>, 420-427, 1961.
35. Babuška, I., "The stability of domains and the question of the formulation of plate problems, *Apl. Mat.*, <u>German</u>, 463-467, 1962.

36. Babuška, I., and R. Vyborny, "The regular and stable boundary points for the diffusion equation*," Ann. Polon. Math.*, <u>German</u>, 91-104, 1962.
37. Babuška, I., "The optimization of notch stress concentration," *ZAMM*, <u>German</u>, No. 1, 1963
38. Babuška, I., "The optimal quadrature formulas," *Dokl. AN SSSR*, <u>Russian</u>, <u>149</u>, 227-230, 1963.
39. Babuška, I., M. Prager and E. Vitasek, "The closure of numerical processes and the method of factorization*," Zurn. Vyc. Mat. i Mat. Fiz.,* <u>Russian</u>, 351-353, 1964.
40. Babuška, I., and S.L. Sobolev, "The optimization of numerical processes," *Apl. Mat.*, <u>Russian</u>, 96-129, 1965.
41. Babuška, I., "Numerical stability of Ritz method," *Apl. Mat.*, <u>German</u>, 196-199, 1965.
42. Babuška, I., and R. Vyborny, "Continuous dependence of eigenvalues on the domain of definition," *Czechoslovak Math. J.*, <u>German,</u> 169-178 (with R. Vyborny), 1965.
43. Babuška, I., "An optimal formula for computation of linear functionals," *Apl. Mat.*, <u>German,</u> 441-443, 1965.
44. Babuška, I., and I. Hlavacek, "On the existence and uniqueness of solution in the theory of visco-elasticity," *Arch. Mech. Stos.*, 47-84, 1966.
45. Babuška, I., "The optimal computation of Fourier coefficients," *Apl. Mat.* <u>German</u>, 113-123, 1966
46. Babuška, I., "Optimal quadratures in the space of periodic functions," *Apl. Mat.*, <u>German</u>, 259-265, 1966.
47. Babuška, I., "An optimal regularization of summation methods of Fourier series," *Apl. Mat.*, <u>Russian</u>, 333-340, 1966.
48. Babuška, I., "A regularization of optimal formulas for computation of Fourier coefficients," *Apl. Mat.*, Czech, (1967), 101-106), 1967.
49. Babuška, I., "Problems of optimization and numerical stability in computation," *Apl. Mat.*, <u>German,</u> 3-26, 1968.
50. Babuška, I., "A universally optimal quadrature formula, I, II," *Apl. Mat.*, <u>German</u>, 302-338, 388-404, 1968.
51. Babuška, I., "The finite element method for elliptic equations with discontinuous coefficients," *Computing*, 5: 207-213, 1970.
52. Babuška, I., "Computation of derivatives in the finite element method*," Comment. Math. Univ. Carolina.*, 11: 3 545-558, 1970.
53. Babuška, I., "Approximation by Hill function," *Comment. Math. Univ. Carolina*, 11: 4, 787-811, 1970.
54. Babuška, I., "Finite element method for domains with corners," *Computing*, <u>6</u>, 264-273, 1970.
55. Babuška, I., "Error-bounds for finite element method," Numer. Math., 16: 322-333, 1971.
56. Babuška, I., "A remark to the finite element method," *Comment. Math. Univ. Carolin.*, 12: 367-376, 1971.
57. Babuška, I., "The rate of convergence for the finite element method," *SIAM J. Numer. Anal.*, 8: 1971.
58. Babuška, I., "The finite element method for infinite domains," *Math. Comp.*, 26: 55-58, 1972.
59. Babuška, I., "Numerical stability in problems of linear algebra," *SIAM J. Numer. Anal.*, 9: 55-78, 1972.
60. Babuška, I., and M. Rosenzweig, "A finite element scheme for domains with corners," *Numer. Math.*, 20: 1-21, 1972.
61. Babuška, I., "Approximation by Hill functions II," *Comment. Math. Univ. Carolin.*, 13: 1-22, 1972.
62. Babuška, I., "The finite element method with Lagrangian multipliers," *Numer. Math.*, 20: 179-192, 1973.
63. Babuška, I., "The finite element method with penalty," *Math. Comp.*, 27: 221-228, 1973.
64. Babuška, I., and M. Zlamal, "Nonconforming elements in the finite element method with penalty*," SIAM J. Numer. Anal.*, 10: 863-875, 1973.
65. Babuška, I., "Non-uniform error estimates for the finite element method*," SIAM J. Numer. Anal.*, 12: 868-875, 1975
66. Babuška, I., and A.K. Aziz, "On the angle condition in the finite element method," *SIAM J. Numer. Anal.*, 13: 214-226, 1976.
67. Babuška, I., "Solution of interface problems by homogenization. I," *SIAM J. Math. Anal.*, 7: 603-634), 1976.
68. Babuška, I., "Solution of interface problems by homogenization. II," *SIAM J. Math. Anal.*, 7: 635-645), 1976.
69. Babuška, I., J.T. Oden and J.K. Lee, "Mixed-hybrid finite element approximations of second-order boundary-value problems," *Comput. Methods Appl. Mech. Engrg.*, 11: 175-206, North-Holland, 1977.
70. Babuška, I., "Solution of interface problems by homogenization. III," *SIAM J. Math. Anal.*, 8: 923-937), 1977.
71. Babuška, I., and W. C. Rheinboldt, "Error estimates for adaptive finite element computations," *SIAM J. Numer. Anal.*, 15: 4, 736-754, 1978.
72. Babuška, I., J.T. Oden and J.K. Lee, "Mixed-hybrid finite element approximations of second-order elliptic value problems, Part 2 - Weak-hybrid methods*," Comput. Methods Appl. Mech. Engrg.*, 14: 1-22, North Holland, 1978.
73. Babuška, I., and W.C. Rheinboldt, "A-posteriori error estimates for the finite element method," *Internat. J. Numer. Methods Engrg.*, 12: 1597-1615, 1979.

74. Babuška, I., and J.E. Osborn, "Numerical treatment of eigenvalue problems for differential equations with discontinuous coefficients," *Math. Comp.*, 32: 144, 991-1023, 1979.

75. Babuška, I., and W.C. Rheinboldt, "Analysis of optimal finite element meshes in R^1", *Math. Comp.*, 33: 146, 435-463, 1979.

76. Babuška, I., and W.C. Rheinboldt, "Adaptive approaches and reliability estimations in finite element analysis," *Comput. Methods Appl. Mech. Engrg.*, 17/18: 519-540, 1979.

77. Babuška, I., R.B. Kellogg and J. Pitkäranta, "Direct and inverse error estimates for finite elements with mesh refinements," *Numer. Math.*, 33: 447-471, 1979.

78. Babuška, I., and J.E. Osborn, "Analysis of finite element methods for second order boundary value problems using mesh dependent norms," *Numer. Math.*, 34: 41-62, 1980.

79. Babuška, I., J. Osborn and J. Pitkäranta, "Analysis of mixed methods using mesh dependent norms," *Math. Comp.*, 35: 152, 1039-1062, 1980

80. Babuška, I., B.A. Szabo and I.N. Katz, "The p-version of the finite element method," *SIAM J. Numer. Anal.*, 18: 515-545, 1981.

81. Babuška, I., and W.C. Rheinboldt, "A-posteriori error analysis of finite element solutions for one-dimensional problems," *SIAM J. Numer. Anal.*, 18: 565-589, 1981.

82. Babuška, I., and Milo R. Dorr, "Error estimates for the combined h- and p-versions of the finite element method," *Numer. Math.*, 37: 257-277, 1981.

83. Babuška, I., and M. Vogelius, "On a dimensional reduction method. I, The optimal selection of basis functions," *Math. Comp.*, 37: 155, 31-45, 1981.

84. Babuška, I., and M. Vogelius, "On a dimensional reduction method. II, Some approximation-theoretic results," *Math. Comp.*, 37: 155, 47-68, 1981.

85. Babuška, I., and M. Vogelius, "On a dimensional reduction method. III, A-posteriori error estimation and an adaptive approach," *Math. Comp.*, 37: 156, 361-383, 1981.

86. Babuška, I., and B. Szabo, "On the rates of convergence of the finite element method," *Internat. J. Numer. Methods Engrg.*, 18: 323-341, 1982.

87. Babuška, I., and W.G. Szymczak, "An error analysis for the finite element method applied to convection diffusion problems," *Comput. Methods Appl. Mech. Engrg.*, 31: 19-42, 1982.

88. Babuška, I., and W.C. Rheinboldt, "Computational error estimates and adaptive processes for some non-linear structural problems," *Comput. Methods Appl. Mech. Engrg.*, 34, 895-937, 1982.

89. Babuška, I., and M. Bieterman, "The finite element method for parabolic equations. I, A-posteriori error estimation," *Numer. Math.*, 40: 339-371, 1982.

90. Babuška, I., and M. Bieterman, "The finite element method for parabolic equations. II, A-posteriori error estimation and adaptive approach," *Numer. Math.*, 40: 373-406, 1982.

91. Babuška, I., and J. Osborn, "Generalized finite element methods, their performance and their relation to mixed methods," *SIAM J. Numer. Anal.*, 20: 510-536, 1983.

92. Babuška, I., D.W. Kelly, J.P. de S.R. Gago, and O.C. Zienkiewicz, "A-posteriori error analysis and adaptive processes in the finite element method - Part I: Error analysis," *Internat. J. Numer. Methods Engrg.*, 19: 1593-1619, 1983.

93. Babuška, I., D.W. Kelly, J. P. DeS.R. Gago, O.C. Zienkiewicz, "A-posteriori error analysis and adaptive processes in the finite element method - Part II: Adaptive method refinement," *Internat. J. Numer. Methods Engrg.*, 19: 1621-1656, 1983.

94. Babuška, I., and M. Vogelius, "Feedback and adaptive finite element solution of one dimensional boundary value problem," *Numer. Math.*, 44: 75-102, 1984.

95. Babuška, I., and A. Miller, "The post-processing approach in the finite element method - Part 1: Calculation of displacements, stresses and other higher derivatives of the displacements" *Internat. J. Numer. Methods Engrg.*, 20: 1085-1109, 1984.

96. Babuška, I., "The post-processing approach in the finite element method - Part 2: The calculation of stress intensity factors," *Internat. J. Numer. Methods* Engrg., 20: 1111-1129, 1984.

97. Babuška, I., and W.G. Szymczak, "Adaptivity and error estimation for the finite element method applied to convection diffusion problems," *SIAM J. Numer. Anal.*, 21: 10-954, 1984.

98. Babuška, I., D.N. Arnold, and J. Osborn, "Finite element methods: Principles for their selection," *Comput. Methods Appl. Mech. Engrg.*, 45: 57-96, 1984.

99. Babuška, I., and A. Miller, "The post-processing approach in the finite element method - Part 3: A-posteriori error estimates and adaptive method selection," *Internat. J. Numer. Methods Engrg.*, 20: 2311-2325, 1984.

100. Babuška, I., and R.C. Morgan, "Composites with a periodic structure: Mathematical analysis and numerical treatment," *Comp. Math. Appl.*, 11: 995-1005, 1985.

101. Babuška, I., and B. Guo, "The h-p version of the finite element method - Part 1: The basic approximation results," *Comput. Mech.*, 1: 21-41, 1986.

102. Babuška, I., and B. Guo, "The h-p version of the finite element method - Part 2: General results and applications," *Comput. Mech.*, 1: 203-220, 1986.

103.	Babuška, I., and M. Bieterman, "An Adaptive method of lines with error control for parabolic equations of the reaction-diffusion type," *J. Comput. Phys.*, 63: 33-66, 1986.
104.	Gui, W., and I. Babuška, "Basic principles of feedback and adaptive approaches in the finite element method," *Comput. Methods Appl. Mech. Engrg.*, 55: 27-42, 1986.
105.	Gui, W., and I. Babuška, "The h, p and h-p versions of the finite element method in 1 dimension - Part I. The error analysis of the p-version," *Numer. Math.*, 49: 577-612, 1986.
106.	Gui, W., and I. Babuška, "The h, p and h-p versions of the finite element method in 1 dimension - Part II. The error analysis of the h- and h-p versions," *Numer. Math.*, 49: 613-657. 1986.
107.	Gui, W., and I. Babuška, "The h, p and h-p versions of the finite element method in 1 dimension - Part III. The adaptive h-p version," *Numer. Math.*, 49: 659-683, 1986.
108.	Babuška, I. and A. Miller, "A feedback finite element method with a posteriori error estimation: Part I. The finite element method and some basic properties of the a posteriori error estimation," *Comput. Methods Appl. Mech. Engrg.*, 61: 1-40, 1987.
109.	Babuška, I. and A.K. Noor, "Quality assessment and control of finite element solutions," *Finite Elements in Analysis and Design*, 3: 1-26. 1987.
110.	Babuška, I. and M. Suri, "The h-p version of the finite element method with quasiuniform meshes," *Mathematical Modelling and Numerical Analysis*, 21: 199-238, 1987.
111.	Babuška, I. and M. Suri, "The optimal convergence rate of the p-version of the finite element method," *SIAM J. Numer. Anal.*, 24: 750-776, 1987.
112.	Babuška, I. and E. Rank, "An expert-system-like feedback approach in the hp-version of the finite element method," *Finite Elements in Analysis and Design*, 3: 127-147, 1987.
113.	Babuška, I. and Hae-Soo Oh, "Pollution problem of the p- and h-p versions of the finite element method," *Comm. in Applied Num. Methods*, 3: 553-561. 1987.
114.	Babuška, I. and J.E. Osborn, "Estimates for the errors in eigenvalue and eigenvector approximation by Galerkin methods, with particular attention to the case of multiple eigenvalues," *SIAM J. Numer. Anal.*, 24: 1249-1276, 1987.
115.	Babuška, I. and V. Majer, "The factorization method for the numerical solution of two point boundary value problems for linear ODE's," *SIAM J. Numer. Anal.*, 24: 1301-1334, 1987.
116.	Babuška, I. and Dehao Yu, "Asymptotically exact a posteriori error estimator for biquadratic elements," *Finite Elements in Analysis and Design,* 3: 341-354, 1987.
117.	Babuška, I., "Information-based numerical practice," *Journal of Complexity*, 3: 331-346, 1987.
118.	Babuška, I. and Ernst Rank, "An expert system for the optimal mesh design in the hp-version of the finite element method" *Internat. J. Numer. Methods Engrg.*, 24: 2087-2106, 1987.
119.	Babuška, I. and B.Q. Guo, "Regularity of the solution of elliptic problems with piecewise analytic data. Part I. Boundary value problems for linear elliptic equation of second order," *SIAM J. Math. Anal.*, 19: 172-203, 1988.
120.	Babuška, I. and Soren Jensen, "Dimensional reduction for nonlinear boundary value problems", *SIAM J. Numer. Anal.*, 25: 644-669, 1988.
121.	Babuška, I. and B.Q. Guo, "The h-p version of the finite element method for domains with curved boundaries," *SIAM J. Numer. Anal.*, 25: 837-861, 1988.
122.	Babuška, I. and M. Suri, "The p-version of the finite element method for constraint boundary conditions," *Math. Comp.*, 51:13, 1988.
123.	Babuška, I. and T. Scapolla, "Benchmark computation and performance evaluation for a rhombic plate bending problem," *Internat. J. Numer. Methods Engrg.*, 28: 155-179, 1989.
124.	Babuška, I. and M. Suri, "The treatment of nonhomogeneous Dirichlet boundary conditions by the p-version of the finite element method," *Numer. Math.*, 55: 97-121, 1989.
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69.   Babuška, I., "Basic problems of reliability of the finite element computation: An overview," Second World Congress on Computational Mechanics, Stuttgart, Federal Republic of Germany, August 27-31, 1990.

70.   Babuška, I., "Accurate and reliable determination of edge and vertex stress intensity factors in three-dimensional elastomechanics," (with B. Andersson and U. Falk), ICAS-90-4.9.2 - 17th Congress of the International Council of the Aeronautical Sciences, Stockholm, Sweden, September 9-14, 1990.

71.   Babuška, I., "Reliability and adaptivity of computational processes in structural mechanics," Sixth World Congress on Finite Element Methods, Banff, Alberta, Canada, October 1-5, 1990.

72.   Babuška, I., "Reliability problems of computational structural mechanics," Symposium on Computational Technology for Flight Vehicles, Sheraton National Hotel, Washington, DC, November 5-7, 1990.

73.   Babuška, I., "Plate modelling and its computational treatment," Workshop on Mathematics of Computation in Partial Differential Equations in honor of J. Bramble, Cornell University, Ithaca, NY, January 25-27, 1991.

74.   Babuška, I., "The modelling of elasticity problems in thin domains," Eighth International Conference on Mathematical and Computer Modelling, University of Maryland at College Park, April 1-4, 1991.

75.   Babuška, I., "On the hierarchic modeling of structures," 8th Conference - Nonlinear Finite Element Analysis and Adina, Cambridge, MA, July 17-19, 1991.

76.   Babuška, I., "Quality control of the finite element analysis," Keynote Lecture, 13th IMACS World Congress on Computation and Applied Mathematics, Dublin, Ireland, July 22-26, 1991.

77.   Babuška, I., "Basic notions and results in the a-posteriori error estimates for the FEM," Second Workshop on Reliability and Adaptive Methods in Computational Mechanics, Cracow, Poland, October 14-16, 1991.

78.   Babuška, I., "Computational analysis of elasticity problems on thin domains and method of dimensional reduction," Keynote Lecture, The Athens Interdisciplinary Olympia (AIO), University of Athens and Delphi-Olympia, Greece, November 12-16, 1991.

79.   Babuška, I., "Adaptive hierarchic modeling of plates and shells with a-posteriori error estimation," Workshop on Adaptive Methods for Partial Differential Equations, Scientific Computation Research Center, Rensselaer Polytechnic Institute, Troy, NY, May 17-20, 1992.

80.   Babuška, I., "The *h-p* version of the finite element method and modelling of plates and shells," International Conference on Spectral and Higher Order Methods, Montpellier, France, June 22-26, 1992.

81.   Babuška, I., "The finite element method today - State of the art and future," ISNA '92, Keynote lecture at International Symposium on Numerical Analysis, Charles University, Prague, Czechoslovakia, August 31-September 4, 1992.

82.   Babuška, I., "Theoretical and practical problems related to the design of constitutive law for plasticity," Workshop on Computational Methods in Materials Science, Carnegie Mellon University, Pittsburgh, PA, September 16-18, 1992.

83.   Babuška, I., "Quality control in computational mechanics," ASME Winter Annual Meeting, Symposium on Adaptive, Multilevel and Hierarchical Computational Strategies, Anaheim, CA, November 8-13, 1992.

84.   Babuška, I., "Adaptive hierarchic modelling of plates and shells with a-posteriori error estimation," IMACS International Symposium on Mathematical Modelling and Scientific Computing, Bangalore, India, December 7-11, 1992.

85.   Babuška, I., "Reliability of computational mechanics," Seminar and Workshop on Simulation Technology, Airport Hilton, St. Louis, MO, January 14-15, 1993 {Industrial Meeting}.

86.   Babuška, I., "Reliability of computational mechanics," MAFELAP 1993, Eighth Conference on the Mathematics of Finite Elements and Applications, Brunel, The University of West London, United Kingdom, April 27-30, 1993.

87.   Babuška, I., "Reliability of the computational analysis," XI Polish Conference on Computer Methods in Mechanics, Kielce-Cedzyna, Poland, May 11-14, 1993.

88.   Babuška, I., "The finite element method," Summer Workshop on Frontiers in Finite Element Technology, Györ, Hungary, August 15-20, 1993.

89.   Babuška, I., "On the *p* and *h-p* version of the finite element method - Mathematics and experience," EQUADIFF 8 - Czech-Slovak Conference on Differential Equations and Their Applications, Comenius University, Bratislava, Slovak Republic, August 24-28, 1993.

90. Babuška, I., "Courant element - Before and after; The finite element method: Fifty years of the Courant element," University of Jyväskylä, Jyväskylä, Finland, August 31-September 4, 1993.
91. Babuška, I., "Reliability of the numerical treatment of engineering problems", Second Linköping Conference on Applied and Industrial Mathematics, Linköping Institute of Technology, Linköping, Sweden, June 6-10, 1994.
92. Babuška, I., "A-posteriori error estimation and adaptive approaches in computational mechanics," Second Summer Conference: Numerical Modelling in Continuum Mechanics, Charles University, Prague, Czech Republic, August 22-25, 1994.
93. Babuška, I., "Superconvergence in the finite element method; A computer-based proof," 6th International Conference on Numerical Methods, Miskolc University, Miskolc, Hungary, August 22-26, 1994.
94. Babuška, I., "The problems of constitutive law for plasticity;" and The p and h-p version of the finite element method, Mechanics and Damage Research Seminar, Karlsruhe University, Karlsruhe, Germany, November 17-18, 1994.
95. Babuška, I., "The problems of constitutive law for plasticity," Ecole Normale Superieure de Cachan, Laboratoire de Mecanique et Technologie, C.N.R.S., Université Paris, France, November 22, 1994.
96. Babuška, I., "Numerical solution of the Helmholtz problem," INRIA, Roquencourt, Paris, France, November 1994.
97. Babuška, I., "Numerical treatment of the problems on domains with unsmooth boundary," Colloque P. Grisvard, Société de Mathématiques Appliquées et Industrielles, Institut Henri Poincaré, Paris, France, November 24-26, 1994.
98. Babuška, I., "Finite element solution of the elliptic problems with unsmooth solutions," Symposium on Advances and Trends in Computational and Applied Mathematics, Austin, Texas, April 20-22, 1995.
99. Babuška, I., "The theory and practice of the h-p and h-p versions of the finite element method for solving 3 dimensional problems of elasticitiy," Third U.S. National Congress on Computational Mechanics, USACM III, Dallas, Texas, June 12-14, 1995.
100. Babuška, I., "The p-version of the finite element method theory and applications," International Conference on Pure and Applied Mathematics, ICPAM 95, Bahrain, November 19-22, 1995.
101. Babuška, I., "The h-p version of the finite element method in the theory and engineering practice," GAMM Meeting, Prague Czech Republic, May 27-31, 1996.
102. Babuška, I., "New trends and problems in finite element method," The mathematics of Finite Elements and Applications VI, Brunel University, United Kingdom, June 24-28, 1996.
103. Babuška, I., "Superconvergence and a-posteriori error estimation in finite element method," Numerical Methods and Computational Mechanics in Science and Engineering, Miscolc Hungary, July 15-19, 1996.
104. Babuška, I., "On the Patch Type Finite Element Method," International Conference on Computational Engineering Science, Hawaii, July 30-August 3, 1996.
105. Babuška, I., "FEM-Latest Developments, Open Problems and Perspectives," International Colloquium on Applications of Computer Science and Mathematics in Architecture and Civil Engineering, Weimar, Germany, February 26 - March 1, 1997.
106. Babuška, I., "Numerical Solution of Plasticity Problems," IUTAM/IACM Symposium on Discretization Methods in Structural Mechanics II, Vienna, Austria, June 2-6, 1997.
107. Babuška, I., "Computational Problems of Composite Materials," International Conference on Numerical Modeling in Continuous Mechanics, Prague, Sept. 8-11, 1997.
108. Babuška, I., "Reliability of Finite Element Computation," IV World Congress on Computational Mechanics, Buenos Aires, June 29 – July 2, 1998.
109. Babuška, I., "Approximation Theory and Generalized Finite Element Method, Conference on Functional Analyses Partial Differential Equations and Applications, Rostock, Germany, August 31-September 4, 1998.
110. Babuška, I., "Can we trust the results of the finite element computation?" MAFELAP 1999, June 22-25, 1999, Brunel University.
111. Babuška, I., "Reliability of Finite Element Computations," SIAM Conference, August 2-6, 1999 Edinburgh, Scotland.
112. Babuška, I., "A posteriori error estimation in the Finite Element Method," US Congress of Computational Mechanics, August 4-6, 1999, Boulder, Colorado.
113. Babuška, I., "Computational Analysis of Fibrous Materials," US Congress of Computational Mechanics, August 4-6, 1999, Boulder, Colorado.
114. Babuška, I., "Problems of dependence of the solution on the domain of definition," Regional Meeting of AMS, October 8-10, 1999, Austin, Texas.
115. Babuška, I., "Problem of optimal shape function in the Generalized Finite Element Method," Regional Meeting of AMS, October 8-10, 1999, Austin, Texas.
116. Babuška, I., "Computational Analysis of Fiber Composite", Homogenization and Effective Media Theories, Workshop at Mathematical Sciences Research Institute, Berkeley, USA, March 6-17, 2000.
117. Babuška, I., "Computer based Proof of Superconvergence," Superconvergence in Finite Element Methods, Workshop at Mathematical Sciences Research Institute, Berkeley, USA, March 20-31, 2000.

118. Babuška, I., "Guaranteed a-posteriori upper and lower bounds of the error of FEM for elliptic PDE's" A-posteriori Error Estimation and Adaptive Approaches in the Finite Element Method, Workshop at Mathematical Sciences Research Institute, Berkeley, USA, April 3-14, 2000.
119. Babuška, I., "Generalized Finite Element Method," Oberwolfach Symposium on Meshless Methods, Germany, April 17-21, 2000.
120. Babuška, I., "The p-version of FEM from the birth to the maturity and beyond," Conference: p-FEM 2000, p and hp Finite Element Methods: Mathematics and Engineering Practice, St. Louis, USA, May 31- June 2, 2000.
121. Babuška, I., "Guaranteed a-posteriori error estimation in the numerical solution of evolution problems," Conference: Numerical Methods for Partial Differential Equations, Anogia, Greece, June 25-29, 2000.
122. Babuška, I., "New Trends and Problems in the Finite element Methods", Conference: Theory and Applications of Finite Element and Related Methods: Hsinchu, Taiwan, June 21-24, 2001.
123. Babuška, I., "Computational Analysis of Fibrous Composites": Conference: Theory and Applications of Finite Element and Related Methods: Hsinchu, Taiwan, June 21-24, 2001.
124. Babuška, I., "Validation and Verification, Some Mathematical Aspects", Conference: Computational Mathematics, Pohang, South Korea, July 2-5, 2001.
125. Babuška, I., "Mathematical Problems of Validation", Conference: Equadiff 11, Prague, Czech Republic, August 27-31, 2001.
126. Babuška, I., "Meshless Method and Generalized Finite Element Method", Conference: Meshfree Methods for Partial Differential Equations, Bonn, Germany, September 11-14, 2001.
127. Babuška, I., "Mathematics of the Verification and Validation in Computational Engineering", International Conference: Mathematical and Computer Modeling in Science and Engineering, Prague, Czech Republic, January 27-30, 2003.
128. Babuška, I., "On Verification and Validation in Computational Mechanics", HERCMA 2003: 6th Hellenic- European conference on Computer Mathematics and it Applications, Athens Greece, September 25-27, 2003.
129. Babuška, I., "Generalized Finite Element Method for Solving Multiscale Problems" International Workshop-Meshfree Methods for Partial Differential Equations, Universitat Bonn, September 15-17, 2003.
130. Babuška, I., "Quadrature Problem in the Meshless Method," Third International Workshop on Meshfree Methods for Partial Differential Equations, Bonn, Germany, September 12-15, 2005.
131. Babuška, I., "Will Computational Sciences Fullfill its Promises, Reliability of Computational Engineering," MAFELAP 2006 Conference, June 13-16, 2006, Brunel University, UK.
132. Babuška, I., "Meshless and Generalized Finite Element Method. Theory and Applications," International Conferences Program and Algorithms of Numerical Mathematics, May 28-31, 2006, Prague, Czech Republic.

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Ivo Babuška studied civil engineering at the Technical University, Prague where he received the Dipl. Ing in 1949. In 1951 he received the degree Dr. Tech. From 1949 he studied at Mathematical Institute of Czechoslovakia Academy of Sciences and then was the head of the Department of Partial Differential Equations. In 1955 he received a PhD in Mathematics and in 1960 D.Sc. in Mathematics.

Ivo Babuška worked in the field of mathematics, applied mathematics, numerical methods, finite element methods, and computational mechanics. Among others in 1955 he was a leader of the computational analysis of the dam ORLIK (gravitational cca 120 meters high) which was built in early 1960. In 1968 he become a professor at University of Maryland at College Park where he retired in 1996 as a Distinguished University Professor.

Ivo Babuška has published more than 320 papers in refereed journals, more than 79 papers in conference proceedings, and several books. He is an invited speaker at major international conferences and is a member numerous editorial boards for scientific journals. For his work he received many honors, among others four doctorate honouris causa, the Czechoslovakia State prize for Mathematics, the Birkhoff prize, the John von Neuman Medal and the Bolzano Medal, Leroy P. Steele for Lifetime Achievement and the Neuron Prize.