University of Auckland
Standard

ACADEMIC CV

NAME: Ian Frederick Collins

CURRENT POSITION: Professor of Theoretical and Applied Mechanics

DEPARTMENT: Engineering Science

EDUCATIONAL QUALIFICATIONS: [Tertiary only]

BA (1962), MA (1965) and PhD (1968) in Applied Mathematics Cambridge University, UK.

PREVIOUS and CURRENT APPOINTMENTS:

Research Officer, British Admiralty (1962-5), Senior lecturer, Manchester University (1969-1980), Professor of Theoretical and Applied Mechanics, Auckland University, New Zealand (1981-..).

Visiting Appointments:

Visiting Scientist, US Steel Research Labs , Visiting Research Fellow ships at Clare Hall, Cambridge at Christ Church College, Oxford and at Churchill College Cambridge. Visiting Professorships at Johns Hopkins University, University of Minnesota, Texas A&M University, and Washington State University, USA, and at University of Nottingham, UK, Sydney University, Australia, Tsinghua University, Beijing ,and Kyushu University, Japan

SIGNIFICANT DISTINCTIONS / AWARDS:

Awarded the 2003 James Watt Medal ,
Received the 2004 Crampton Award and
Awarded the 2005 Geotechnical Research Medal,
all from the UK Institute of Civil Engineers (ICE).

PROFESSIONAL SOCIETIES / SERVICE / OTHER ACTIVITIES:

Fellow of the Royal Society of New Zealand,
Fellow of the Institution of Professional Engineers of New Zealand
Fellow of the Institute of Mathematics and its Applications, UK.
Member of the American Society of Civil Engineers
Member of the American Society of Mechanical Engineers

Service Positions within Auckland University

Head of Department of Engineering Science (1981-1991)
Associate Dean of Engineering for Postgraduate Matters (1993-2000)
Associate Dean of Engineering for Research (1993-1998, 2006-2007)
Associate Dean of Engineering for International Matters (1999-2003)

RESEARCH SPECIALTIES / CAREER:

Representative journal papers

COLLINS, I. F., MUHUNTHAN, B and QU , B, 2009 Thermomechanical "State Parameter" Models for sands, Geotechnique, in press.
COLLINS, I, F and KELLY, P. Constrained Thermomechanical rigid-plastic models of granular materials. International Journal of Engineering Science, in press.
KONG, L. and COLLINS, I.F.2008 Thermomechanical approach to modeling constitutive behaviors of geomaterials. (in Chinese) Yanue Lixue / Rock and Soil Mechanics, 29, 7, 1732-1740.
EINEV, I and COLLINS I. F. 2008. A thermomechanical framework of plasticity based on probabilistic micromechanics. Journal of Mechanics of Materials and Structures, 3, No 5,867-892.
COLLINS, I.F., MUHUNTHAN, B. TAI, A.T.T. and PENDER, M. J. 2007.The concept of a 'Reynolds-Taylor state' and the mechanics of sand. *Geotechnique*, 57, No5, 437-447.
JIDONG ZHAO, DAICHAO SHENG, and IAN F. COLLINS 2006, Thermomechanical formulation of strain gradient plasticity for geomaterials. *J, Mechanics of Materials and Structures* 1, No 5 837-863.
COLLINS, I.F. 2005, Elastic/plastic models for soils and sands. Int. J. Mech Sci. 47, 493-508.
COLLINS, I.F. 2005, The concept of stored plastic work or frozen elastic energy in soil mechanics. Geotechnique 55, No 5, 373-382. (
BOULBIBANE, M., COLLINS, I. F., PONTER, A.R.S. and WEICHERT, D.2005, Shakedown of unbound pavements. Road Materials and Pavement Design, 6, No 1, 81-96.
COLLINS, I.F. 2003, A systematic procedure for constructing three-dimensional critical state models. Int. J. Solids Structures 40, 4379-4397.
COLLINS, I.F. and MUHUNTHAN ,B. 2003 On the relationship between stress- dilatancy, anisotropy and plastic dissipation for granular materials Geotechnique 53, No 7, 611-618.
COLLINS, I.F. and HILDER, T. 2002 A theoretical framework for elastic/plastic constitutive models for triaxial tests. Int. J. Num. Anal. Meth. Geomechanics. 26, 1313-1347
COLLINS I.F. and KELLY, P.A. 2002, A thermomechanical analysis of a family of soil models. Geotechnique, 52, No 7, 507-518
HASHIGUCHI, K and COLLINS, I. F. 2001, Stress rate elastic stretching relations in elastoplastic constitutive equations for soils. Soils and Foundations (Japanese Geotechnical Society) 41, No 2, 77-87.
BOULBIBANE, M., COLLINS, I. F., WEICHERT,D. and RAAD, L.2000 Shakedown analysis of anisotropic asphalt concrete pavements with clay subgrade. Can.Geotech. J. 37, 882-889.
ZHENG, Q-S and COLLINS, I.F. 1998 The relationship between damage variables and their evolution laws and micro-structural and physical properties. Proceedings of the Royal Society Ser. A. 454, 1469-1498.
COLLINS, I.F. and HOULSBY,G.T. 1997 Application of thermomechanical principles to the modeling of geotechnical materials. Proceedings of the Royal Society, Series A 453, 1975-2001. (over 100 citations)