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A tribute to Ching S. Chang – Teacher, researcher and mentor

Foreword



Professor Ching S. Chang has spent a major part of his career in the Civil Engineering department of the University of Massachusetts at Amherst (UMass–Amherst) after a short stint at the State University of New York–Buffalo. At UMass–Amherst, he has taught courses and conducted fundamental research in geotechnical engineering. His research contributions include theoretical and analytical developments in geomechanics as well as solutions for practical geotechnical engineering problems. His main topics of interest include modeling of soil consolidation, footing, and ground settlement due to earthquakes, deformation, and pore pressure developments under cyclic loading, analysis of the interaction of railroad track with underlying ballast–soil layers design of bridge abutments and plastic pipes, and asphaltic concrete overlay on roads, slope stability.

His most significant scientific contributions are in the micromechanics of granular materials. He is among the earliest researcher in geotechnical engineering to successfully develop relationships between macro-scale stress–strain and particle-scale contact behavior. This work, which began in the early 1980s, led to the development of both kinematical and statical approaches for obtaining stress–strain relationships as functions of contact laws. He has continuously and persistently refined these relationships and approaches to address many vexing problems associated with developing such micro–macro correlations. An examination of his publication list will show that he has applied alternative approaches to the mathematical modeling of constitutive behavior of soils or granular materials. The models he has derived have examined many critical issues in granular soil modeling, including those of particle rotations, couple stresses, higher gradient effects, bonding between particles, damage of cemented particles, wave propagation, instabilities, plasticity, dilatancy, and critical states.

A number of his publications have been co-authored with many graduate students whom Professor Chang mentored from what can be easily described as a “cradle to maturity”. Many of his publications feature remarkable international collaborations. All this is a tribute to his scientific temperament and his very patient and forgiving personality. He is a modest man who is loath to trumpet his considerable academic accomplishments. Therefore, it is a pleasure and privilege to dedicate this special volume to honor Professor Ching S. Chang. We wish Professor Ching S. Chang perfect health, vast energy and unlimited happiness, and hope for many more years of inspiring contributions from him.

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