

Curriculum Vitae of Chen Yun-tai (Y. T. Chen)

Name: Chen Yun-tai

Position: Professor and Honorary Director, Institute of Geophysics, China Seismological Bureau; Professor and Dean of School of Earth and Space Sciences, Peking (Beijing) University.

Nationality: Chinese

Date of Birth: August 10, 1940

Scientific Field: Geophysics

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Profession and Appointment:

Professor and Honorary Director, Institute of Geophysics, China Seismological Bureau;
Professor and Dean of School of Earth and Space Sciences, Peking (Beijing) University.

Honors:

Award of National Congress of Sciences of China, 1978.

National Distinguished Scientist appointed by the National Sciences and Technology Commission of China, 1986.

Medal awarded by the Luxembourg for scientific achievements and promotion of friendship between Chinese and Luxembourg people, 1987.

Third Class National Award of Natural Sciences and Technology, 1987.

Second Class Award of Progress of Sciences and Technology of the State Seismological Bureau, China, 1983, 1983, 1988.

First Class Award of Progress of Sciences and Technology of the State Seismological Bureau, China, 1998.

Third Class National Award of Progress of Sciences and Technology, 1998.

Ho Leung Ho Lee Science and Technology Progress Award, 2000.

Degrees:

B. Sc., Department of Geophysics, Peking (Beijing) University, Beijing, China, 1962.

Ph. D., Institute of Geophysics, Chinese Academy of Sciences, Beijing, China, 1966.

Membership:

Member, Standing Committee of the National Committee of China Association for Science and Technology, 2000 to date.

Member, Chinese Academy of Sciences, 1991 to date.

Fellow, The Third World Academy of Sciences, 1999 to date

President (1986-1991, 1995-2002), Vice-President (1991-1995), Seismological Society of China.

Chairman (2003 to date), Vice-Chairman (1999-2003), China National Committee for IUGG (2003 to date)

Chairman (1999-2003), China National Committee for IASPEI, IUGG

Vice Chairman, Earth Sciences Division, Chinese Academy of Sciences (1997 to date)

Biographical Information:

Chen Yun-tai was born on August 10, 1940 in Xiamen of Fujian Province, China. He obtained his B.Sc. degree in 1962 from Department of Geophysics, Peking (Beijing) University, China, and his Ph.D. in 1966 from Institute of Geophysics, Chinese Academy of Sciences, Beijing, China.

From 1966 to 1978, Chen Yun-tai worked in the Institute of Geophysics, Chinese Academy of Sciences in a research position as assistant, and during this period, he investigated theory of seismic waves and sources, and applied the theory to the studies of source process of significant earthquakes which occurred in the earthquake active period of 1966 to 1976 in China. He proposed a practical technique for determination of source parameters of small and moderate earthquakes and quality factor of transmitting medium. He obtained a closed form expression for the static displacement field in a half-space by the dislocation in a rectangular fault for the case of unequal Lamé constants. His studies on the source process of the 1966 Xingtai ($M_S=7.2$), 1975 Haicheng ($M_S=7.3$) and 1976 Tangshan ($M_S=7.8$) earthquakes using seismic, geodetic, tilt and gravity data, and determination of the source parameters of these significant events have been recognized as pioneer studies in this field in China. In recognition of this achievement he was awarded an Award of National Congress of Science, China, in 1978.

He became an associate professor in 1978, and was promoted to full professor in March 1982, becoming the youngest professor in the State Seismological Bureau, China.

From 1981-1983, Chen Yun-tai went to the USA for advanced studies at the Institute of Geophysics and Planetary Physics, University of California, Los Angeles. It was

during this period in IGPP, UCLA, he worked under the guidance of Professor Leon Knopoff, and made contribution to the studies of static, quasi-static as well as dynamic crack models of earthquake source and the simulation of earthquake sequences.

Upon his return to China in 1983, Chen Yun-tai continued working on the dynamic crack propagation problem, spatio-temporal complexities of earthquake source process and earthquake hazard mitigation. He obtained that heterogeneities of both stress drop and cohesion are the main factors that control the growth, cessation, and healing of the crack, and that the complexities in seismic radiation are caused by the complex healing process as well as complex rupture propagation. He has been conducted near-field observation using mobile digital, broadband accelerograph network in China, and has obtained numbers of valuable strong ground motion recordings of earthquakes and underground explosions. His studies on moment tensor inversion and complexities of source process of the recent significant earthquakes in China, particularly in Tibetan plateau are pioneer studies in this field in China.

From 1986 to date, Chen Yun-tai served as President (1986-1991, 1995-2002), Vice-President (1991-1995), of Seismological Society of China. He has been served as Director of the Institute of Geophysics, State Seismological Bureau (now China Seismological Bureau) from 1986 to 2000. He has been served as Professor in Graduate School, Chinese Sciences and Technology University (Beijing). He taught over 200 geophysical students at both undergraduate and postgraduate levels since 1978. He served as principal supervisor for M. Sc. and Ph.D. candidates, including graduate students from developing countries. Many students received training in his group and have become successful researchers. In 1991, he was elected as Member of the Chinese Academy of Sciences, and in 1997, Vice-Chairman of the Earth Science Division of the Chinese Academy of Sciences. In 1999, he was elected as Fellow of the Third World Academy of Sciences. From 2001 to date, Chen Yun-tai served as Dean of School of Earth and Space Sciences, Peking (Beijing) University. Presently he is Chairman of China National Committee for IUGG.

During his scientific career Chen Yun-tai has published over 170 research papers. He has also co-published textbook in geophysics which has been the standard textbook in geophysics for more than 20 years in China. He served as the Editor-in-Chief of the *Acta Seismologica Sinica* (both Chinese and English editions) from 1986 to date, the Associate Editor-in-Chief of the *Acta Geophysica Sinica*, the member of the Editorial Board of *Chinese Sciences and Science Bulletin*, among others.

Chen Yun-tai's work has been recognized internationally. He was elected as Vice-Chairman of the Federation of Digital broadband Seismograph Network (FDSN) in 1989-1991. He was a member of the Editorial Board of the *Pure and Applied Geophysics (PAGEOPH)* from 1995-1999 and is currently the member of the Editorial Board of the *Journal of Seismology (JOSE)*. From 1995 to 2000, he served as the member of the Board of the IGCP Project " Seismic Ground Motion in Large Urban

Areas”.

As a result of his scientific achievements, Chen Yun-tai has received several awards. In 1978, he received the Award of National Congress of Science, China. In 1987 he received the Third Class Award of National Natural Sciences of China. In 1998 he received the Third Class Award of National Award of Progress of Science and Technology of China. He also received several Awards of Progress of Science and Technology of the State Seismological Bureau, three Second Class in 1983, 1983, 1988 and one First Class in 1998. In 1986, he was appointed as National Distinguished Scientist by the National Science and Technology Commission of China. In 1987, he was awarded a medal from Luxembourg for his scientific achievements and promotion of friendship between Chinese and Luxembourg people. In 2000, he received the Ho Leung Ho Lee Science and Technology Progress Award.

Chen Yun-tai maintains tight collaboration with many other research groups around the world, particularly in USA, UK, Italy, India, Germany, France, Japan, Vietnam and Korea. As a principal investigator and project leader, he worked collaboratively with Professor Francis T. Wu of State University of New York at Binghamton in “*Near-Source Observation of Strong Ground Motion*”, with Dr. Cris Browitt and Dr. David Booth, of British Geological Survey at Edingburgh, in “*Seismological Study of Yanqing-Huailai Basin*”, with Professor John F. Kuo of Columbia University, in “*Gravity Change and Earthquake Occurrence*”. He is currently the project leader of the Sino-U.S. cooperative project “*A Comparative Study of Natural and Mine-Induced Seismicity in the Yanqing-Huailai Basin and the Haicheng Area*”, the Sino-Germany cooperative project “*Yanqing-Huailai Seismic Array*” and the Sino-Italy cooperative project “*Geophysical Studies for the Deterministic Evaluation of Seismic Risk*”.

List of selected publications:

- [1] Chen, Y. T., Lin, B. H., Lin, Z. Y. and Li, Z. Y., 1975. The focal mechanism of the 1966 Xingtai earthquake as inferred from the ground deformation observations. *Acta Geophysica Sinica*, **18**(3): 164-182 (in Chinese with English abstract). Also in: Wu, F. T. (ed.), *Chinese Geophysics*, **1**(2), Washington DC: AGU, 263-288.
- [2] Qiu, Q. (Chen, Y. T. *et al.*), 1976. On the background and seismic activity of the $M=7.8$ Tangshan earthquake, Hebei Province of July 28, 1976. *Acta Geophysica Sinica*, **19**(4): 259-269 (in Chinese with English abstract). Also in: Wu, F. T. (ed.), *Chinese Geophysics*, **1**(1), Washington DC: AGU, 67-78.
- [3] Chen, Y. T., Huang, L. R., Lin, B. H., Liu, M. L. and Wang, X. H., 1979. A dislocation model of the Tangshan earthquake of 1976 from the inversion of geodetic data. *Acta Geophysica Sinica*, **22**(3): 201-217 (in Chinese with English abstract). Also in: Wu, F. T. (ed.), *Chinese Geophysics*, **2**(1), Washington DC: AGU, 11-30.
- [4] Chen, Y. T., Gu, H. D. and Lu, Z. X., 1979. Variations of gravity before and after the Haicheng earthquake, 1975, and the Tangshan earthquake, 1976. *Phys. Earth*

- Planet. Int.*, **18**(3): 330-338.
- [5] Fu, C. Y., Chen, Y. T. and Qi, G. Z., 1985. *Fundamentals of Geophysics*. Beijing: The Scientific Publishing House, 447pp (in Chinese).
- [6] Chen, Y. T. and Knopoff, L., 1986. Static shear crack with a zone of slip-weakening. *Geophys. J. R. astr. Soc.*, **87**(3): 1005-1024.
- [7] Chen, Y. T. and Knopoff, L., 1986. The quasistatic extension of a shear crack in a viscoelastic medium. *Geophys. J. R. astr. Soc.*, **87**(3): 1025-1039.
- [8] Chen, Y. T. and Knopoff, L., 1987. Simulation of earthquake sequences. *Geophys. J. R. astr. Soc.*, **91**(3): 693-709.
- [9] Chen, Y. T., Chen, X. F. and Knopoff, L., 1987. Spontaneous growth and autonomous contraction of a two-dimensional earthquake fault. In: Wesson, R.L. (ed.), *Mechanics of Earthquake Faulting. Tectonophysics*, **144**(1/3): 5-17.
- [10] Chen, Y. T., Chen, Z. L. and Wang, B. Q., 1992. Seismological studies of earthquake prediction in China: a review. In: Dragoni, M. and Boschi, E. (eds.), *Earthquake Prediction*. Roma: Il Cigno Galileo Galilei, 71-109.
- [11] Chen, Y. T., Zhou, J. Y. and Ni, J. C., 1991. Inversion of near-source broadband accelerograms for the earthquake source time function. *Tectonophysics*, **197**(1): 89-98.
- [12] Wu, Z. L., Chen, Y. T. and Mu, Q. D., 1994. *Nuclear Explosion Seismology: An Outline*. Beijing: Seismological Press, 140pp (in Chinese).
- [13] Chen, Y. T., Xu, L. S., Li, X. and Zhao, M., 1996. Source process of the 1990 Gonghe, China, earthquake and tectonic stress field in the northeastern Qinghai-Xizang (Tibetan) plateau. *PAGEOPH*, **146**(3/4): 697-715.
- [14] Chen, Y. T. and Xu, L. S., 2000. A time domain inversion technique for the tempo-spatial distribution of slip on a finite fault plane with applications to recent large earthquakes in Tibetan Plateau, *Geophys. J. Intl.*, **143**(2): 407-416.
- [15] Zhou, Y. H., Xu, L. S. and Chen, Y. T., 2002. Source process of the 4 June 2000 Sumatra, Indonesia, earthquake. *Bull. Seism. Soc. Amer.*, **92**(5): 2027-2035.