

# Resume and Publications



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## Education

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- 1978.3-1985.1, **B.S.** and **M.S** in Hydrogeology and Engineering Geology from Wuhan College of Geology, Wuhan, China
- 1989.9-1992.8, **Ph.D** in Engineering Geology from Institute of Geology, Chinese Academy of Sciences(CAS), Beijing, China

## Work Experience

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- 1985.2-1989.8, China University of Geosciences, Wuhan, China, lecturer and associated professor, deputy director of Engineering Geology Division
- 1998.8-1999.3, Morgan State University, Baltimore, US, visiting scholarship in soil dynamics
- 1992.9-1995.11, China University of Geosciences, Wuhan, China, postdoctor researcher, associated professor and professor, director of Engineering Geology and geotechnique division
- 1995.12-2015.9, Institute of Geology and Geophysics, CAS, Beijing, China, research professor, deputy director and director of Key Laboratory of Engineering Geomechanics, CAS
- 2000.2-3, Joseph Fourier University, Grenoble, France, visiting scholarship in engineering geology
- 2015.10-present, Shaoxing University, Zhejiang, China, professor of engineering geology and rock mechanics

## Social Appointments & Reputations

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- 2003, head of expert group of the State Council for Three Gorges Project,
- **2006.9-present, president of IAEG China National Group, vice president of China Engineering Geology Commission;**
- **2007.1-2010.12, vice president of IAEG for Asia;**
- **2008.7-2011.8, vice president of Chinese Society for Rock Mechanics and Engineering;**
- **2011.1-present, Secretary General of IAEG.**
- 2013, foreign member of Russian Natural Sciences;
- 1997, 2<sup>nd</sup> prize of Science & Technology, Hubei province, China;

- 2009, Special award of Science & Technology, Chinese Society for Rock Mechanics and Engineering;
- 2009, 2<sup>nd</sup> prize of Science & Technology, Chinese State Council;
- 2011, State Council special allowance expert;
- 2012, 1<sup>st</sup> prize of Science & Technology, Chinese Society for Rock Mechanics and Engineering;
- 2016, 1<sup>st</sup> prize of Science & Technology, Chinese Society for Rock Mechanics and Engineering;
- 2018, Senior Specialist of Zhejiang Province, China;
- 2018, Senior Specialist of Shaoxing city, China;
- **2020, IAGG Hans Cloos Medal;**
- 2020, 2<sup>nd</sup> prize of Dayu Hydro-Science & Technology, Ministry of Water Resources, PRC;
- 2020, Special Achievement Medal of Shaoxing Economy Development

## Main Research Projects

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- 2000~2001, mechanism of uplift deformation of the dam foundation of Jiangya Water Power Station, Hunan province, China;
- 2000~2002, genesis and the engineering effects of the deep buried unloading zones in the slopes of Jinping I Hydropower station (dam height 305m), Yalong River, Sichuan, China;
- 2001~2004, crustal activity in the region of interbasin water diversion from the south to north of China;
- 2003~2007, stability and reinforcement of engineered slope in Jinping I Hydropower station, Yalong River, Sichuan, China;
- 2003~2008, program on stability and reinforcement of slopes in the new immigrant cities in Three Gorges reservoir area;
- 2004~2009, key geological problems of deep buried tunnels;
- 2007~2009, excavation induced deformation and failure of the underground powerhouse surrounding rockmass under high geostress in Jinping I Hydropower station, Yalong River, Sichuan, China.
- 2011-2014, Quick deformation and failure of rockmass with high strain energy induced by excavation in the area of eastern boundary of Tibet plateau, Key Program of National Natural Science Foundation of China.
- 2012-2016, protection of engineering slope under seismic action, special supported project by Chinese Academy of Sciences
- 2019-2023, Excavation induced weakening of strong anisotropic rock masses and active regulating on their strength and stiffness, Key Program of National Natural Science Foundation of China.

## Publications

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- **English journal articles and book chapters**

1. Yan Tongzhen, **Wu Faquan**, Prognostic zonation of landslides nearby Yangpingguan town, I.IUGS.UNESCO, Project250, 1987,84-90
2. **Wu Faquan**, A 3-D model of jointed rockmass and its properties, Int. J. Min. Geo. Eng., 1988,6,169-176.
3. **Wu Faquan**, Constitutive model and strength of jointed rockmass, ISLG, 1991, 44-48.

4. **Wu Faquan**, A constitutive model and strength theory of cracked rockmass, Chinese Science Bulletin, 1992,2,Vol.37, No.2,131-135.
5. **Wu Faquan**, et al, Statistical method and theory in rockmass mechanics, Chinese Science Bulletin,1994,6,Vol.39,No.6,493-503.
6. **Wu Faquan**, Method to calculate engineering parameters of rockmass, 8th ICRM,1995.9, Rock Foundation,115-118.
7. **Wu Faquan**, et al, Principles of statistical rockmass, Rock Mechanics in China, Science Press, New York. Ltd., 1995,97-116.
8. **Wu Faquan**, et al, Deformation and failure of rockmass caused by underground mining at Jiangjunya carved-stone cultural relic spot in Liangyungang, easter China, Proc. Int. Symp. Eng. Geo. and the Envir., 1997, 2569-2573.
9. **Wu Faquan**, Wang Sijing, A stress-strain relationship for jointed rockmass, Int. J. Rock Mechanics. & Mining Sciences (SCI), 2001.7, Vol 38, No 4, pp 591~598.
10. **Wu Faquan**, Wang Sijing, Compressive strength of jointed rock mass, Int. J Geotechnique (SCI), 51, No.9,815-818.
11. **Wu Faquan**, Wang Sijing, Statistical model for structure of jointed rock mass, Int. J. Geotechnique (SCI), 52, No.2, 137-140.
12. **Wu Faquan**, Qi Shengwen, Lan Hengxing. On Mechanism of Uplift Deformation of the Dam Foundation of Jiangya Water Power Station, Hunan province, China. Hydrogeology, 2 005 13: 451-466.
13. **Wu Faquan**, Fu Bihong,Li Xiao .Initial analysis of the mechanism of the Wenchuan Earthquake(Southwest China), 12 May 2008. Bull Eng Geol Environ 2008, 67:453–455
14. **Faquan Wu**, Jianyou Liu, Tong Liu, Huaze Zhuang and Changgen Yan, A method for assessment of excavation damaged zone (EDZ) of a rock mass and its application to a dam foundation case, Engineering Geology, 104(2009) 254-262
15. **Faquan Wu**, Tong Liu, Jianyou Liu, Xianliang Tang, Excavation unloading destruction phenomena in rock dam foundations, Bull Eng Geol Environ, 2009
16. Shengwen Qi, **Faquan Wu**, Zhong Qi Yue, Chunling Liu.Characteristics and mechanism of deep weathering of argillaceous limestones at Fengjie County, Three Gorges Region, Central China[J]. Bulletin of Engineering Geology and the Environment, 2012, 71(2):285-295
17. Xiuhong Hu, **Faquan Wu**, Qiang Sun.Elastic modulus of a rock mass based on the two parameter negative-exponential (TPNE) distribution of discontinuity spacing and trace length[J]. Bulletin of Engineering Geology and the Environment, 2011,70(2):255-263.
18. **Faquan Wu**, Yuanhua Luo and Zhonghua Chang .Slope reinforcement for housing in Three Gorges reservoir area[J]. Journal of Mountain Sciene, 2011, 8(2):314-320.
19. **Faquan Wu**, Xiuhong Hu, Manfu Gong, Jianyou Liu, Aiwu Ren, Unloading deformation during layered excavation for the underground powerhouse of Jinping I Hydropower Station, southwest China, Bull Eng Geol Environ (2010) 69:343–351
20. **Faquan Wu**, Jie Wu, Shengwen Qi, Phenomena and theoretical analysis for the failure of brittle rocks, J. Rock Mech. Geot. Eng., 2010 2 (4): 331-337
21. Qi Shengwen, **Wu Faquan** and Liu Chunling, 2010, Effects of Single Face Slope on Seismic Ground Reponses, 3461-3468, In Geologically Active – Williams et al. (eds) Taylor & Francis Group, London, ISBN 978-0-415-60034-7,
22. Yan Changgen, **Wu Faquan**, Liu Tong, Qi Shengwen, Unloading phenomena characteristics in brittle rock masses by a large-scale excavation in dam foundation, 3889-3896, In Geologically Active – Williams

et al. (eds) Taylor & Francis Group, London, ISBN 978-0-415-60034-7

23. Qi Shengwen, **Wu Faquan**. 2010, Influence of deep seated discontinuities on the left slope of Jinping I Hydropower Station and its stability analysis, Bulletin of Engineering Geology and the Environment. DOI 10.1007/s10064-010-0268-0 (SCI/EI)
24. Ye Jianhong, **Wu Faquan** and Sun J. Z (2009): Estimation of the tensile elastic modulus of rock materials with Brazilian disc by applying opposite concentrate load diametrically based on isotropy. International Journal of Rock Mechanics and Mining Sciences, 46(3), 568–576.
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26. **Faquan Wu**, Tong Liu, Jianyou Liu and Xianliang Tang, Excavation unloading destruction phenomena in rock dam foundations, Bull Eng Geol Environ, 2009, 68(2): 257-262 (SCI)
27. Qi Shengwen, **Wu Faquan**, Chang Zhonghua, Liu Haiyan. Mechanism of deformation mode of near horizontal layer bank slope of Fengjie county, Three gorges. International Symposium on latest natural disasters-new challenges for engineering geology, geotechnics and civil protection. Sept. 5-8, 2005, Sofia, Bulgaria, 89-89
28. **Wu Faquan**, Engineering geological research methods and techniques, Engineering geology Century Achievements in China, 2004, Wang Sijing, Huang Dingcheng, 367-452.
29. Ye Jianhong, **Wu Faquan** and Sun J. Z (2009): Estimation of the tensile elastic modulus of rock materials with Brazilian disc by applying opposite concentrate load diametrically based on isotropy. International Journal of Rock Mechanics and Mining Sciences, 46(3), 568–576.
30. Yan Changgen, **Wu Faquan**, Liu Tong, Qi Shengwen, Unloading phenomena characteristics in brittle rock masses by a large-scale excavation in dam foundation, 3889-3896, In Geologically Active – Williams et al. (eds) Taylor & Francis Group, London, ISBN 978-0-415-60034-7.

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31. **Wu Faquan**. Schist slope deformation and failure analysis and statistical forecasting in Yangpingguan region. Earth Science, 1 (1985).
32. **Wu Faquan**. Theoretical analysis for deformation properties of the rock mass structure model. Mine Geology, 3 (1987), 70-76.
33. **Wu Faquan**. Statistical methods and theory of rock mechanics. Chinese Science Bulletin, 15 (1993), 1345-1354.
34. **Wu Faquan**, Statistical fracture mechanics analysis of the constitutive model and strength theory of jointed rock mass. Hydrogeology and Engineering Geology, 1991, 2: 7-11.
35. **Wu Faquan**, Geological radar technology in geotechnical engineering, Urban Geotechnical Investigation & Surveying, 1, 1994, 9-12.
36. **Wu Faquan**, Kalman filtering method and its application in the deformation prediction of the Lianzi Cliff dangerous rock mass, The Chinese Journal of Geological Hazard and Control, 1995, 12(7), 56-60.
37. **Wu Faquan**, Discussion on a dynamics prediction method of the landslide displacement, The Chinese Journal of Geological Hazard and Control, 1995, 12(7), 38-42.
38. **Wu Faquan**, Theoretical analysis of the schist slopes bending deformation, Journal of Engineering Geology, 5(4), 1997, 306-311.
- 39 **Wu Faquan**, Statistical mechanics studies of rockmass engineering properties, Hydrogeology and Engineering Geology, 24(2), 1997, 17-19.

40. **Wu Faquan**, Xu Jiamao, Wang Sijing, Qualitative analysis of the slope engineering deformation in the similarity transform qualitative, Journal of Engineering Geology, 6(2),1998,128-133.
41. **Wu Faquan**, Geological engineering problems of Three Gorges Dam Project, Hydrogeology and Engineering Geology, 1998.
42. **Wu Faquan**, The major engineering geology and environment problems in 21th century in China, Journal of Engineering Geology, 9(2),2001,1-6.
43. Lan Hengxing, Qi Shengwen, **Wu Faquan**, Nonlinear dynamics simulation of Ganhaizi landslide in Xiluodu Hydropower Station, Journal of Xiangtan Mining Institute, 16(3),2001,5-10.
44. Yan Tongzhen, **Wu Faquan**, Static and dynamic laws of landslide system and quantitative prediction of slope instability, Earth Science, 14(2), 1989, 117-134.
45. Yan Tongzhen, Yin Kunlong, **Wu Faquan**, Progress of quantitative prediction of landslide, Hydrogeology and Engineering Geology, 6,1988,8-14.
46. Qi Shengwen, **Wu Faquan**, Yan Fuzhang, The foundation and slope stability prediction of Aba aluminum factory, Journal of Engineering Geology, 23(6),2001.
47. Lan Hengxing, **Wu Faquan**, Zhou Chenghu, Wang Lingjuan, Spatial analysis and forecasting of rainfall-induced landslide hazard supported by GIS. Chinese Science Bulletin, 48(5),2003,507-512.
48. Lan Hengxing, **Wu Faquan**, Wang Sijing, GIS-based Landslide CF multiple regression model and its application, Journal of Mountain Science, 20(6), 2002,732-737.
49. Chang Zhonghua, **Wu Faquan**, Liu Haiyan, Types and structure characteristics of bank slope in Fengjie County of the Three Gorges reservoir area, Chinese Journal of Rock Mechanics and Engineering, 24(17),2005,3057-3063.
50. Chai Jianfeng, **Wu Faquan**, Chang Zhonghua, The fault activity and its engineering effects of the west route of South-to-North Water Transfer Project, Journal of Jilin University(Earth Science Edition), 35(1),2005,64-69.
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52. Tao Bo, **Wu Faquan**, Guo Qiliang, Guo Gaimei, Research on rheology rule of deep-buried long tunnel of Wuqiaoling under high crust stress. Earth and Environment, 33, 2005,304-308.
53. Tao Bo, Nai Lei, **Wu Faquan**, Guo Gaimei, Chai Jianfeng, The effect imposed on Anti-side pilc by the static latrcal pressure, Journal of Jilin University (Earth Science Edition), 35(2),2005,201-206.
54. Di Qingyun, **Wu Faquan**, Wang Sijing, Wang Guangjie, Tao Bo, Gong Fei, An Zhiguo, Shi Kunfa, Li Yingxian, Wang Miaoyue, Geophysical exploration over long deep tunnel for west route of south-to-north water transfer project, Chinese Journal of Rock Mechanics and Engineering, 24(20),2005,3631-3638.
55. Liu Tong, **Wu Faquan**, Ji Weidong, Huang Xiaoning, Jiao Zhenhua, Three dimensional elasto-plastic numerical analysis of stability of surrounding rock at an underground plant under an asymmetrical load, Journal of Engineering Geology, 13(4), 2005,465-470.
56. Liu Haiyan, **Wu Faquan**, Li Zengxue, Liu Tong, Study on stability characteristics of main seam roof in Yanzhou coalfield, Chinese Journal of Rock Mechanics and Engineering, 25(7),2006,1450-1456.
57. Liu Haiyan, **Wu Faquan**, Qi Shengwen, Chang Zhonghua, Cui Yongjun, The dissolution process and the rock mass breakage of marlite slope in Three Gorges Reservoir Region, Coal Geology and Exploration, 34(4),2006,37-41.
58. Liu Haiyan, **Wu Faquan**, Qi Shengwen, Chang Zhonghua, Li Shuijin, Zhang Sumei, Some new finding on the boundaries of Baiyi'an landslide in Fengji, Three Gorges, Journal of

Engineering Geology, 14(6), 2006,782-787

59. Qi Shengwen, **Wu Faquan**, Chang Zhonghua, Liu Haiyan, Si weibing, Mechanism and model for deformation of bank slope with slightly inclined soil layers in Fengjie County of Three Gorges, Chinese Journal of Rock Mechanics and Engineering, 28(1),2006,88-91.

60. Yang Xiaoyong, **Wu Faquan**, Su Shengrui, Expert system of fuzzy information for classification of surrounding rock mass in highway tunnel, Chinese Journal of Rock Mechanics and Engineering, 25(1), 2006,100-105.

61. Yang Xiaoyong, **Wu Faquan**, Su Shengrui, Dynamic constructional response of a shallow buried and unsymmetrical loaded double arch tunnel across an ancient landslide, Journal of Engineering Geology,14(3), 2006,314-319.

62. Wang Genlong,**Wu Faquan**, Men Yunming, Analysis of reliability index calculation on the basis of plasticity limit analysis & slice method of soil slope, Journal of Engineering Geology, 14(6),2006,835-840.

63. Guo Qiliang,**Wu Faquan**, Qian Weiping, Zhang Yanshan, Study on relationship between deformation of surrounding rock and in-situ stress in Wushaoling deep-buried railway tunnel, Chinese Journal of Rock Mechanics and Engineering, 25(11),2006,2194-2199.

64. Tao Bo, **Wu Faquan**, Guo Qiliang, Guo Gaimei, Yang Xiaoyong, Research on rheology rule of deep-buried long Wuqiaoling tunnel under high crustal stress by monitoring and numerical analysis, Chinese Journal of Rock Mechanics and Engineering, 25(9), 1828-1834.

65. Tao Bo, **Wu Faquan**, Guo Qiliang, Topography's influence on self-weight stress field of horizontal rock formation, Coal Geology & Exploration, 34(1), 2006,34-37.

66. Tao Bo, **Wu Faquan**, Di Qingyun, Guo Qiliang, Mao Junbiao, Application of comprehensive geophysics exploration technology to water diversion project from south to north of China, Journal of China University of Petroleum, 30(3), 2006, 30-35.

67. Wang Genlong, **Wu Faquan**, Qi Shengwen, He Haifang, Research on limit analysis upper bound method for stability evaluation of anchored rock slope, Chinese Journal of Rock Mechanics and Engineering, 26(12),2007,2556-2563.

68. Wang Genlong, **Wu Faquan**, Li Juwen, Rock slope stability analysis based on plasticity limit theory – method of slices with inclined interfaces, Chinese Journal of Geotechnical Engineering, 29(12),2007,1767-1771.

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71. Wang Genlong, **Wu Faquan**, Li Junwen, Liu Haiyan, Chang Zhonghua, Forecasting method of tensile crack's position occurred at rear of expressway rock slope, Journal of Engineering Geology, 15(supp1.),2007,498-501.

72. Wang Genlong, **Wu Faquan**, Zhang Junhui, Liu Jianyou, Liu Tong, Stability analysis of soil slope on the condition of deformable body, Journal of Engineering Geology,15(supp2.),2007,193-196.

73. Zhu Jiewang, **Wu Faquan**, Su Tianming, Zhang Luqing, Zhao Erchang, Failure modes and stabilization methods of highly incised slopes in Wanzhou, mountainous region of Three Gorges Reservoir, Journal of Engineering Geology, 15(1),2007,8-15.

74. Qi Shengwen, **Wu Faquan**, Zhuang Huaze, et, al. Characteristics of unloading fissures in dam's base of Xiaowan hydropower station. Chinese Journal of Rock Mechanics and Engineering,2008, 27,

(Supp.1): 2907-2912.

75. Fan Yongbo, **Wu Faquan**, Hu Sherong, et al. Distribution of plastic zones in existing tunnel due to new construction closely above the tunnel and their mechanism and reinforcement. *Journal of Engineering Geology*, 2008, 16(2):268-272.
76. Fan Yongbo, **Wu Faquan**, Huang Meiqun, et al. Study on stratum deformation about intersection tunnel[J]. *Construction Technology*, 2008, 37(9):79-81.
77. Wang Genlong, **Wu Faquan**, Zhang Junhui, et al. Upper bound approach of rigid elements for inhomogeneous soil slope stability analysis. *Chinese Journal of Rock Mechanics and Engineering*, 2008, 27(supp2): 3425-3430.
78. Wang Genlong, **Wu Faquan**, Liu Jianyou, et al. Method for calculating disturbed thickness of slide zone in rock slope with two-layers structure, *Journal of Engineering Geology*, 2008, 16(1): 104-108.
79. Ren Aiwu, **Wu Faquan**, Fan Yongbo, et al. Analysis and forecast of large rock block instability at top arch under complex geological condition, *Journal of Engineering Geology*, 2008, 16(6): 788-792.
80. HU Xiu-Hong, **Wu Faquan**, LIU Hai-Yan, et al. Measure model K- I crack stress intensity factor of rock-mass via laser holographic interferometry, *Rock and Soil Mechanics*, 2008, 29(11): 3124-3127.
81. Wang Dong, **Wu Faquan**, Ren Aiwu, et al. Stability analysis of the slope inside approach channel at Jingping hydroelectric power station, *Journal of Engineering Geology*, 2008, 16(6): 793-797.
82. Song Yuhuan, Yan Changgen, **Wu Faquan**, et al. Impacts of inundation of reservoir on Moluocun landslide, *Hydrogeology & Engineering Geology*, 2008, 35(3): 76-78.
83. **Wu Faquan**, On professional value and development of engineering geology, *Journal of Engineering Geology*, 17(2), 2009, 175-179.
84. **Wu Faquan**, The state of the art and expectation of geo-engineering in China, *Journal of Engineering Geology*, 17(4), 2009, 463-466.
85. **Wu Faquan**, Liu Tong, Tang Xianliang, Liu Jianyou, Research on unloading and zonation of rock mass dam foundation excavation-A case study of Xiaowan Hydropower Station, *Chinese Journal of Rock Mechanics and Engineering*, 28(6), 2009, 1091-1098.
86. Liu Jianyou, **Wu Faquan**, Liu Tong, Liang Ning, Xue Jihong, Geological problems encountered in rock tunnel at Jin Ping II hydroelectric power station and their treatment measures, *Journal of Engineering Geology*, 17(5), 2009, 590-596.
87. Zhu Wenbin, **Wu Faquan**, Ren Aiwu etc, Analysis and forecast on stability of local rock blocks with complex structures during large-scale underground excavation, *The Chinese Journal of Geological Hazard and Control*, 20(4), 2009, 130-134.
88. Fan Yongbo, **Wu Faquan**, Wang Genlong, Study on stability of the tunnel-face slope at Houziyan hydropower station, *The Chinese Journal of Geological Hazard and Control*, 20(3), 2009, 35-39.
89. Yan Changgen, **Wu Faquan**, Qi Shengwen, Liu Tong, Gongdao Changke, Numerical simulation study on deformation and strength parameters and size effect of random jointed rock mass, *Chinese Journal of Geotechnical Engineering*, 2009, 6.
90. Liang Ning, **Wu Faquan**, Liu Tong, Liu Jianyou, Probability analysis of key blocks in Jinping II hydropower station convey tunnel, *Hydrogeology & Engineering Geology*, 2009(3), 86-89.
91. Liang Ning, **Wu Faquan**, Liu Tong, Liu Jianyou, Application of block theory based stereo-analytical method to stability analysis of conveyor tunnel at Jinping II hydropower station, *Journal of Engineering Geology*, 17, 2009, 383-388.
92. Ren Aiwu, **Wu Faquan**, Wangdong etc. Analysis on unloading phenomenon of rock excavation and its mechanics model of Xiaowan power station, *Journal of Yangtze River Scientific Research Institute*, 26(5),

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93. Ren Aiwu, **Wu Faquan**, He Aifang etc. A new method to invert nonlinear stress field of underground powerhouse at Jinping first stage hydropower station, Journal of Liaoning Technical University, 28(5),2009,758-761.

94. Hu Xiuhong, **Wu Faquan**, Research on two-parameter negative exponential distribution of discontinuity spacings in rock mass, Rock and Soil Mechanics, 30(8),2009,2354-2358.

95. Xiong Zheng, **Wu Faquan**, Reliability of underground caverns based on genetic algorithm and support vector machine, Chinese Journal of Geotechnical Engineering,32(7),2010,1035-1041.

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100. Hu Xiuhong, **Wu Faquan**, Improved constitutive relation of rock mass based on two-parameter negative exponential distribution, Chinese Journal of Rock Mechanics and engineering,29(2),2010,3455-3462.

101. Wang genlong, **Wu Faquan**, Cai xiaoguang, Stability analysis of consequent rock slope considering slippage of bedding plane, Hydrogeology & Engineering Geology,37(2), 2010, 55-64.

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105. Qi Shengwen, **Wu Faquan**, Surrounding rockmass quality classification of tunnel cut by TBM with fuzzy mathematics method, Chinese Journal of Rock Mechanics and Engineering,30(6),2011,1225-1229.

106. Yang Guoxiang, **Wu Faquan**, Dong Jinyu, Qi Shengwen, Study of dynamic response characters and failure mechanism of rock slope under earthquake, Chinese Journal of Rock Mechanics and Engineering,31(4),2012,696-702.

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