Doc. RNDr. David Mašín, MPhil., PhD.

24. 8. 1978	Born in Mělník, Czech Republic

Study and employment:

1996 – 2001	*MSc. degree* in engineering geology, Faculty of Science, Charles University, Prague
2002 - 2003	*M.Phil. degree* in geotechnical engineering, City University, London.
2006	*Ph.D. degree* in engineering geology, Charles University, Prague
2004 - 2007	Lecturer, Faculty of Science, Charles University, Prague
2007 - 2011	Senior Lecturer, Faculty of Science, Charles University, Prague
since 2011	Associate Professor, Faculty of Science, Charles University, Prague

Professional Activities:

- A national representative in Technical Committees TC103 (Numerical Methods in Geomechanics), TC106 (Unsaturated Soils) and TC204 (Underground construction in soft ground) of the International Society for Soil Mechanics and Geotechnical Engineering.
- Since 2010 secretary of the Czech and Slovak Society for Soil Mechanics and Geotechnical Engineering, a Member Society of ISSMGE.
- 2009-2015 a member of the panel P105 of the Czech Science Foundation.
- Editorial board member, journal *Computers and Geotechnics*.

Research Funding:

- TAČR TA04031603 (2014-2017; Integrated tool for practical application of advanced computational models for geomaterials allowing for increase of safety and lifetime of traffic infrastructure), co-investigator.
- GAČR 15-05935S (2015-2017; Development of thermo-hydro-mechanical model for expansive soils and simulation of nuclear waste repository), primary investigator.
- GAČR P105/12/1705 (2012-2014; Development of advanced numerical methods for geomaterials), primary investigator.
- TAČR TA01031840 (2011-2013; Development and applications of numerical methods for increased safety of tunnels), co-investigator.
- GAČR 205/08/0732 (2008-2010; Development and evaluation of numerical methods for tunnelling in fine-grained soils), primary investigator.
- GAAV IAA200710605 (2006-2008; Development of hypoplastic models for non-standard materials), primary investigator.
- GAUK 331/B-GEO/PřF (2004-2006; Development and calibration of constitutive models for double-porosity soils), primary investigator.

Awards:

- International awards for best journal papers by early career researchers in unsaturated soil mechanics 2014, International Society for Soil Mechanics and Geotechnical Engineering, TC106 (unsaturated soils).
- Computers and Geotechnics Outstanding Reviewer in 2012 award.
- Shamsher Prakash Research Award in Geotechnical Engineering 2010.
- International Association for Computer Methods and Advances in Geomechanics Junior Excellent Paper Award 2008.
- ALERT Geomaterials PhD prize 2007.
- Quido Záruba award for outstanding research in the field of geotechnical engineering and engineering geology 2007.

Invited lectures:

- Semi-plenary lecture, 6th International Conference on Unsaturated Soils (UNSAT 2014), Sydney, Australia, 2-4. 7. 2014.
- Semi-plenary lecture, 13th conference of the International Association for Computer Methods and

Advances in Geomechanics, Melbourne, Australia, 9-11. 5. 2011.
- Plenary lecture, 2nd European Conference on Unsaturated Soils (E-UNSAT 2012), Napoli, Italy, 20-22. 6. 2012.

PhD courses:
- PhD course "Hypoplasticity for Practical Applications", lecturer: National University of Singapore, 11-14. 1. 2011; University of Western Australia, Perth, 21. 1. 2011; University of Stuttgart, 18-20. 1. 2012; The Hong Kong University of Science and Technology, 16-17. 2. 2012; Charles University in Prague, 16-17. 9. 2014.
- PhD course "ALERT Olek Zienkiewicz Course – Summerschool 2012, Constitutive Modelling of. Soils", co-lecturer Dresden, 17-21. 9. 2012;

Conference organisation:
- 12th International Conference Underground Construction, Prague, 22-24, April, 2013: member of local organising committee
- 13th International Conference Underground Construction, Prague, 23-25, May, 2016: member of local organising committee
- Prague Geotechnical Days 2015, Prague, May 11-12, 2015: member of Scientific Committee
- Prague Geotechnical Days 2014, Prague, May 12-13, 2014: member of Scientific Committee

Publication activity:
- Since 2005 32 papers in the international peer reviewed-journals (31 in the ISI WOS database), 8 papers in peer-reviewed local journals, 45 contributions at international conferences and 13 contributions at local conferences.
- **H-index by WOS = 11, by SCOPUS = 13.**

Selected publications:
- Ng, C. W. W., Boonyarak, T. and Mašín, D. (2015). Effects of pillar depth and shielding on crossing multi-tunnel interaction. **ASCE Journal of Geotechnical and Geoenvironmental Engineering** (in print).
- Bruthans, J., Soukup, J., Vaculikova, J., Filippi, M., Schweigstillova, J., Mayo, A., Masin, D., Kletetschka, G. and Rihosek, J. (2014). Sandstone landforms shaped by negative feedback between stress and erosion. **Nature Geoscience** 7, No. 8, 597-601.
- Wong, K. S. and Mašín, D. (2014). Coupled hydro-mechanical model for partially saturated soils predicting small strain stiffness. **Computers and Geotechnics** 61, 355-369.
- Mašín, D. (2014). Clay hypoplasticity model including stiffness anisotropy. **Géotechnique** 64, No. 3, 232-238.
- Wong, K. S., Mašín, D. and Ng, C. W. W. (2014). Modelling of shear stiffness of unsaturated fine grained soils at very small strains. **Computers and Geotechnics** 56, 28-39.
- Mašín, D. and Rott, J. (2013). Small strain stiffness anisotropy of natural sedimentary clays: review and a model. **Acta Geotechnica** (in print).
- Mašín, D. (2013). Double structure hydromechanical coupling formalism and a model for unsaturated expansive clays. **Engineering Geology** 165, 73-88.
- Ng, C. W. W., Boonyarak, T. and Mašín, D. (2013). Three-dimensional centrifuge and numerical modeling of the interaction between perpendicularly crossing tunnels. **Canadian Geotechnical Journal** 50, No. 9, 935-946.
- Blecha, V. and Mašín, D. (2013). Observed and calculated gravity anomalies above a tunnel driven in clays - implication for errors in gravity interpretation. **Near Surface Geophysics** 11, No. 5, 569-578.
- Mašín, D. (2013). Clay hypoplasticity with explicitly defined asymptotic states. **Acta Geotechnica** 8, No. 5, 481-496.
- Mašín, D. (2012). Asymptotic behaviour of granular materials. **Granular Matter** 14, No. 6, 759-774**.**
- Mašín, D. Hypoplastic Cam-clay model. **Géotechnique** 62, No. 6, 549-553.
- Trhlíková, J., Mašín, D. and Boháč, J. Small strain behaviour of cemented soils. **Géotechnique,** 2012, 62, No. 10, 943-947.
- Najser, J., Mašín, D. and Boháč, J. Numerical modelling of lumpy clay landfill. **International Journal for Numerical and Analytical Methods in Geomechanics**, 2012, Vol. 36, No. 1, 17-35.

- Mašín, D. and Khalili, N. A thermo-mechanical model for variably saturated soils based on hypoplasticity. **International Journal for Numerical and Analytical Methods in Geomechanics,** 2012, 36, No. 12, 1461-1485.
- D'Onza, F., Gallipoli, D., Wheeler, S., Casini, F., Vaunat, J., Khalili, N., Laloui, L., Mancuso, C., Mašín, D., Nuth, M., Pereira, J. M. and Vassallo, R. Benchmark of constitutive models for unsaturated soils. **Géotechnique,** 2011**,** 61, No. 4, 283-302.
- Svoboda, T., Mašín, D. and Boháč, J. Class A predictions of a NATM tunnel in stiff clay. **Computers and Geotechnics**, 2010, vol. 37, No. 6, 817-825.
- Suchomel, R. and Mašín, D. Comparison of different probabilistic methods for predicting stability of a slope in spatially variable c-phi soil. **Computers and Geotechnics**, 2010, vol. 37, No. 1-2, 132-140.
- Mašín, D. Predicting the dependency of a degree of saturation on void ratio and suction using effective stress principle for unsaturated soils. **International Journal for Numerical and Analytical Methods in Geomechanics**, 2010, vol. 34, No. 1, 73-90.
- Mašín, D. Comparison of predictive capabilities of selected elasto-plastic and hypoplastic models for structured clays. **Soils and Foundations,** 2009, vol. 49, no. 3, p. 381-390.
- Mašín, D. 3D modelling of a NATM tunnel in high K0 clay using two different constitutive models. **ASCE Journal of Geotechnical and Geoenvironmental Engineering**,, 2009, vol. 135, no. 9, p. 1326-1335.
- Hájek, V., Mašín, D. and Boháč, J. Capability of constitutive models to simulate soils with different OCR using a single set of parameters. **Computers and Geotechnics**, 2009, vol. 36, no. 4, p. 655-664.
- Gudehus, G. and Mašín, D. Graphical representation of constitutive equations. **Géotechnique**, 2009, vol. 52, no. 2, p. 147-151.
- Mašín, D. and Khalili, N. A hypoplastic model for mechanical response of unsaturated soils. **International Journal for Numerical and Analytical Methods in Geomechanics**, 2008, vol. 32, no. 15, p. 1903-1926.
- Gudehus, G., Amorosi, A., Gens, A., Herle, I., Kolymbas, D., Mašín, D., Muir Wood, D., Nova, R., Niemunis, A., Pastor, M., Tamagnini, C., Viggiani, G. The soilmodels.info project. **International Journal for Numerical and Analytical Methods in Geomechanics,** 2008, vol. 32, No. 12, 1571-1572.
- Mašín, D. A hypoplastic constitutive model for clays with meta-stable structure. **Canadian Geotechnical Journal**, 2007, vol. 44, no. 3, p. 363-375.
- Stallebrass, S. E., Atkinson, J. H. and Mašín, D. Manufacture of Samples of Overconsolidated Clay by Laboratory Sedimentation. **Géotechnique**, 2007, vol. 57, no. 2, p. 249-253.
- Mašín, D., Tamagnini, C., Viggiani, G. and Costanzo, D. Directional response of a reconstituted fine-grained soil - Part II: performance of different constitutive models. **International Journal for Numerical and Analytical Methods in Geomechanics**, 2006, vol. 30, no. 13, p. 1303-1336.
- Mašín, D. and Herle, I. State boundary surface of a hypoplastic model for clays. **Computers and Geotechnics**, 2005, vol. 32, no. 6, p. 400-410.
- Mašín, D. A hypoplastic constitutive model for clays. **International Journal for Numerical and Analytical Methods in Geomechanics**, 2005, vol. 29, no. 4, p. 311-336.
- Svoboda, T. and Mašín, D. (2011). Comparison of displacement fields predicted by 2D and 3D finite element modelling of shallow NATM tunnels in clays. **Geotechnik** 34, No. 2, 115-126.
- Mašín, D. and Herle, I. Improvement of a hypoplastic model to predict clay behaviour under undrained conditions. **Acta Geotechnica**, 2007, vol. 2, no. 4, p. 261-268.