

## SUGGESTED READING

- Bagi, K. (1993): A quasi-static numerical model for micro-level analysis of granular assemblies. *Mechanics of Materials* 16 (1-2), 101-110
- Bagi, K. (1995): Geometrical modelling of granular assemblies. *Acta Technica Acad. Sci. Hung.*, Vol. 107. (1-2), pp. 1-16
- Bagi, K. (1996): Stress and strain in granular assemblies. *Mechanics of Materials*, Vol. 22., pp. 165-177
- Bagi, K. (1997): Szemcsehalmozatok mikro- és makrováltozóinak összefüggései. Kandidátusi értekezés, MTA, Budapest
- Bagi, K. (1999): Microstructural stress tensor of granular assemblies with volume forces. *Journal of Applied Mechanics*, Vol. 66. No. 4., pp. 934-936
- Bagi, K. (2005): An algorithm to generate random dense arrangements for discrete element simulations of granular assemblies. *Granular Matter*, Vol. 7 (1), pp. 31-43
- Bagi, K. (2006): Analysis of microstructural strain tensors for granular assemblies. *Int. J. Solids and Structures*, Vol. 43(10), pp. 3166-3184
- Bagi, K. (2007): On the concept of jammed configurations from a structural mechanics perspective. *Granular Matter*, Vol. 7 (1), pp. 31-43
- Barbosa, R. – Ghaboussi, J. (1992): Discrete finite element method. *Eng. Comput.* 9:253–266.
- Bathe, K.J. – Wilson, E.L. (1976): Numerical methods in finite element analysis. Englewood Cliffs, Prentice-Hall
- Belytschko, T. – Liu, W.K. – Moran, B.: Nonlinear finite elements for continua and structures. Wiley, 2000
- Benabbou, A. – Borouchaki, H. – Laug, P. – Lu, J. (2009): Geometrical modeling of granular structures in two and three dimensions. Application to nanostructures. *International Journal for Numerical Methods in Engineering*, Vol. 80 (4), pp. 425–454
- Calvetti, F. – Nova, R. – Castellanza, R. (2004): Modelling the subsidence induced by degradation of abandoned mines. *Modelling of Cohesive-Frictional Materials*, eds. Vermeer, Ehlers, Herrmann & Ramm, Taylor & Francis Group, London, pp. 137-148
- Cheng, Y. P. – Nakata, Y. – Bolton, M. D. (2003): Discrete element simulation of crushable soil. *Géotechnique* 53, No. 7, 633–641
- Cui, L. – O’Sullivan, C. (2003): Analysis of a triangulation based approach for specimen generation for discrete element simulations. *Granular Matter* 5(3), pp. 135-145
- Cundall, P.A. (1971): A computer model for simulating progressive large scale movements in blocky rock systems. *Procs. Symposium of the International Society of Rock Mechanics*, Nancy, France, 1971, Vol. 1. Paper # II-8.
- Cundall, P.A. – Strack, O.D.L. (1979): A discrete numerical model for granular assemblies. *Geotechnique*, Vol. 29 (1), pp. 47-65
- Cundall, P.A. (1982): Adaptive density scaling for time-explicit calculations. *Procs. 4th International Conference on Numerical Methods in Geomechanics*, Edmonton, 1982, pp. 23-26
- Cundall, P.A. – Strack, O.D.L. (1983): Modelling of microscopic mechanisms in granular material. In: *Mechanics of Granular Materials: New Models and Constitutive Equations*, ed. J.T. Jenkins – M. Satake, Elsevier, pp. 137-149
- Cundall, P.A. (1987): Distinct element models of rock and soil structure. In: *Analytical and computational methods in engineering rock mechanics*, ed. E.T. Brown, Ch. 4, Allen & Unwin, London, pp. 129-163
- Cundall, P.A. (1988): Formulation of a three-dimensional distinct element model – Part I: A scheme to detect and represent contacts in a system composed of manz polzedral blocks. *Int. J. Rock Mech. Min. Sci. & Geomech. Abst.*, Vol. 25, pp. 107-116

- Cundall, P.A. – Hart, D.H. (1992): Numerical modelling of discontinua. *Journal of Engineering Computations*, Vol. 9, pp. 101-113
- Daudon, D. – Lanier, J. – Jean, M. (1997): A micromechanical comparison between experimental results and numerical simulation of a biaxial test on 2D granular material. In: *Powders and Grains 97*, ed. Behringer et al, Balkema, pp. 219-222
- Drescher, A. – de Josselin de Jong, C. (1972): Photoelastic verification of a mechanical model for the flow of a granular material. *Journal of the Mechanics and Physics of Solids*, Vol. 20, pp. 337-351
- Feng, Y.T. – Owen, D.R.J. (2003): Filling domains with disks: an advancing front approach. *International Journal for Numerical Methods in Engineering*, Vol. 56, pp. 699-713
- Foo, Y.Y – Sheng, Y. – Briscoe, B.J. (2004): An experimental and numerical study of the compaction of alumina aggregates. *Int. J. Solids and Structures*, Vol. 41(21), pp. 5929-5943
- Ghaboussi J. (1988): Fully deformable discrete element analysis using a finite element approach. *Int. J. Comput. Geotech.* **5**:175–195.
- Goodman RE – Taylor, RL – Brekke T. (1968): A model for mechanics of jointed rock. *J. Soil Mech. Found. Div. Proc. ASCE* **94**:SM3
- Jiang, K., Esaki, T. (2002): Quantitative evaluation of stability changes in historical stone bridges in Kagoshima, Japan, by weathering. *Eng. Geol.* **63**, pp. 83-91
- Kamai, R. – Hatzor, Y.H. (2005): Dynamic back analysis of structural failures in archeological sites to obtain paleo-seismic parameters using DDA. *Procs. ICADD-7*, ed. M. MacLaughlin – N. Sitar, Honolulu, December 2005, pp. 121-136
- Hatzor, Y.H., Arzi, A.A., Tsesarsky, M. (2002): Realistic dynamic analysis of jointed rock slopes using DDA. *Procs. ICADD-5*, Abingdon, 2002, ed. Y. Hatzor, Balkema, pp. 47-56
- Helbing, D. – Farkas, I. – Vicsek, T (2000): Simulating dynamical features of escape panic. *Nature* **407**(28), pp. 487-490
- Hertz, H. (1881): Über die Berührung fester elastischer Körper, *J. Reine und Angewandte Mathematik*, Bd.92
- Hopkins, M.A. – Daly, S.F. – Lever, J.H. (1996): Three-dimensional simulation of river ice jams. In: *Procs 8th International Specialty Conference on Cold Regions Engineering*, Fairbanks, AK, August 12-17, 1996
- Itasca Consulting Group (2007): 3 Dimensional Distinct Element Code. Users Guide. Minneapolis, Minnesota, USA
- Itasca Consulting Group (2008): Particle Flow Code in Three Dimensions. Users Guide. Minneapolis, Minnesota, USA
- Itasca Consulting Group (2011): Universal Distinct Element Code. Users Guide. Minneapolis, Minnesota, USA
- Jean, M. – Moreau, J.J. (1992): Unilaterality and dry friction in the dynamics of rigid body collections. *Procs. Contact Mechanics International Symposium*, Lausanne, Switzerland, Presses Polytechniques et Universitaires Romandes, pp. 31-48
- Jean, M. (1999): The non-smooth contact dynamics method. *Comp. Methods Appl. Mech. Engr.*, Vol. 177, pp. 235-257
- Jodrey, W.S., Tory, E.M.: Computer simulation of close random packing of equal spheres. *Phys. Rev. A* **32**, 2347–2351 (1985)
- Kadau, D. – Bartels, G. – Brendel, L. – Wolf, D.E. (2002): Contact dynamics simulations of compacting cohesive granular systems. *Comp. Phys. Comm.* Vol. 147, pp. 190-193
- Kanatani, K. (1981): A theory of contact force distribution in granular materials. *Powder Technology*, Vol. 28, pp. 167-172

- Kishino, Y. (1988): Disc model analysis of granular media. In: Satake, M. and J.T. Jenkins (eds): *Micromechanics of Granular Materials*, Elsevier, pp. 143-152
- Konishi, J. – Naruse, F. (1988): A note on fabric in terms of voids. In: *Micromechanics of Granular Materials*, ed. M. Satake - J.T. Jenkins, Elsevier, pp. 39-46
- Kuhn, M.R. (2003): Smooth convex three-dimensional particle for the discrete element method. *Journal of Engineering Mechanics*, Vol. 129 (5), pp. 539-547
- Labra, C. – Onate, E. (2009): High-density sphere packing for discrete element method simulations. *Communications in Numerical Methods in Engineering*, Vol. 25 (7), pp. 837-849
- Law, H.K., Lam, I.P. (2003): Evaluation of seismic performance for tunnel retrofit project. *Journal for Geotechnical and Geoenvironmental Engineering*, Vol. 129. No. 7, pp. 575-589
- Lemos, J.V. (1996): Modelling of arch dams on rock foundations. In: *Prediction and Performance in Rock Mechanics and Rock Engineering*, ed. G. Barla, Balkema, Vol. 1. pp. 519-526
- Lemos, J.V. (1999): Discrete element analysis of dam foundations. In: *Distinct Element Modelling in Geomechanics*, ed. V.M. Sharma et al, Balkema, pp. 89-115
- Lu, M. – McDowell, G.R. (2007): The importance of modelling ballast particle shape in the discrete element method. *Granular Matter*, Vol. 9 (1-2), pp. 69-80
- Lubachevsky, B.D. – Stillinger, F.H. (1990): Geometric properties of random disk packings. *Journal of Statistical Physics*, Vol. 60, pp. 561-583
- MacLaughlin, M.M. (1997): Discontinuous deformation analysis of the kinematics of landslides. PhD Dissertation, Dept. of Civil and Envr. Eng., University of California Berkeley (117 pages)
- Matsushima, T. – Saomoto, H. (2002): Discrete element modeling for irregularly-shaped sand grains. *Procs. NUMGE2002 (Numerical Methods in Geotechnical Engineering, 2002)*, ed. Mestat, pp. 239-246
- McDowell, G. R. – Harireche, O. (2002): Discrete element modelling of soil particle fracture. *Géotechnique* 52, No. 2, 131–135
- Mehrabadi, M.M. – Nemat-Nasser, S. – Shodja, H.M. – Subbash, G. (1988): Some basic theoretical and experimental results on micromechanics of granular flow. In: *Micromechanics of Granular Materials*, ed. M. Satake - J.T. Jenkins, Elsevier, pp. 253-262
- Mindlin, R.D. – Deresiewicz, H. (1953): Elastic Spheres in Contact under Varying Oblique Forces, *ASME Journal of Applied Mechanics*, Vol. 20, pp. 327-344
- Munjiza A. (2004): *The Combined Finite-Discrete Element Method*. Wiley, London
- Munjiza A – Owen, DRJ – Bicanic, N. (1995): A combined finite/discrete element method in transient dynamics of fracturing solids. *Eng. Comput.* 12:145–174.
- Ng, T.-T. (2001): Fabric evolution of ellipsoidal arrays with different particle shapes. *ASCE Journal of Engineering Mechanics*, Vol. 127, pp. 994-999
- Oda, M. (1982): Fabric tensor for discontinuous geological materials. *Soils and Foundations*, Vol. 22(4), pp. 96-108
- O’Sullivan, C. (2011): *Particulate discrete element modelling: A geomechanics perspective*. Spon Press, Taylor and Francis
- Owen, DRJ – Peric, D – de Souza Neto, EA – Crook, AJL – Yu, J – Klerck, PA (1999): Computational strategies for discrete systems and multi-fracturing materials. In: *ECCM European Conference on Computational Mechanics*, Munchen, 1999
- Popper, Gy. – Csizmás, F. (1993): *Numerikus módszerek mérnököknek*. Akadémiai Kiadó, Budapest
- Radjai, F. – Wolf, D.E. – Jean, M. – Moreau, J.J. (1998): Bimodal character of stress transmission in granular packings. *Physica Review Letters*, Vol. 80, pp. 61-64

- Rothenburg, L. – Selvadurai, A.P.S. (1981): A micromechanical definition of the Cauchy stress tensor for particulate media. *Procs. Intl. Symp. on the Mechanical Behavior of Structured Media, Ottawa*, ed. A.P.S. Selvadurai, Part B, pp. 469-486
- Rothenburg, L. – Bathurst, R.J. (1993): Influence of particle eccentricity on micromechanical behavior of granular materials. *Mechanics of Materials, Vol. 16 (1-2)*, pp. 141-152
- Satake, M. (1978): Constitution of Mechanics of Granular Materials through the Graph Theory. In: *Mechanics of Granular Materials: Continuum-Mechanical and Statistical Approaches*, Gakujutsu Bunken Fukyukai, Tokyo, pp. 47-62
- Satake, M. (1982): Fabric tensor in granular materials. *IUTAM Symp. on Deformations and Failure of Granular Materials*, ed. P.A. Vermeer – H.J. Luger, Balkema, pp. 63-68
- Scheldt, T., Lu, M., Myrvang, A. (2002): Numerical analysis of Gjøvick cavern. *Procs. ICADD-5, Abingdon, 2002*, ed. Y. Hatzor, Balkema, pp. 125-132
- Serrano, A.A. – Rodriguez-Ortiz, J.M. (1973): A contribution to the mechanics of heterogeneous granular media, *Proc. Symp. Plasticity and Soil Mechanics*, Cambridge, pp. 215-227
- Shi, G.-H. (1988): Discontinuous deformation analysis – A new model for the statics and dynamics of block systems. PhD thesis, University of California Berkeley, USA
- Shi, G.-H. (2001): Three dimensional discontinuous deformation analysis. *Procs. ICADD-4, 6-8 June 2001, Glasgow*, ed. N. Bicanic, pp. 1-21
- Stoyan, G. – Takó, G- (2004): *Numerikus módszerek 1.-3.* Typotex, Budapest
- Ting, J.M. (1992): A robust algorithm for ellipse-based discrete element modeling of granular materials. *Computers and Geotechnics*,
- Ting, J.M. – Khwaja, M. – Meachum, L.R. – Rowell, J.D. (1993): An ellipse-based discrete element model for granular materials. *Int. J. for Numerical and Analytical Methods in Geomechanics, Vol. 17(9)*, pp. 603-623
- Unger, T. – Kertész, J. (2003): The contact dynamics method for granular media. In: *Modeling of Complex Systems*, Melville, New York, American Institute of Physics, pp. 116-138
- Unger, T. – Wolf, D.E. – Kertész, J. (2004): Force indeterminacy in the jammed state of hard disks. *cond-mat/0403089*
- Zhao, Sh. – Salami, M.R. – Rahman, M.Sh. (2000): Three dimensional spherical DDA model for granular media. *Procs. 14th Engineering Mechanics Conf., ed. J.L. Tassoulas, Austin, Texas, 21-24 May 2000*
- Zhu, W., Zhang, Q., Jing, L. (1999): Stability analysis of the ship-lock slopes of the Three Gorges project by three-dimensional FEM and DEM techniques. *Procs. ICADD-3, Vail, Colorado, 3-4 June 1999*, ed. B. Amadei, American Rock Mechanics Association, pp. 263-272