

RECENT ADVANCES IN CONTACT MECHANICS

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References

- [1] W. Han and M. Sofonea, Quasistatic Contact Problems in Viscoelasticity and Viscoplasticity, *Studies in Advanced Mathematics, Vol. 30, American Mathematical Society, Providence, RI –International Press, Somerville, MA*, 2002.
- [2] Shillor M., Sofonea M. and Telega J.J., *Models and Analysis of Quasistatic Contact*, Lecture Notes in Physics **655**, Springer, Berlin Heidelberg 2004.
- [3] M. Sofonea, W. Han and M. Shillor, *Analysis and Approximation of Contact Problems with Adhesion or Damage*, Pure and Applied Mathematics **276**, Chapman-Hall/CRC Press, New York, 2006.
- [4] M. Sofonea and A. Matei, Variational Inequalities with Applications. A Study of Antiplane Frictional Contact Problems, *Advances in Mechanics and Mathematics, Vol. 18*, Springer, New York, 2009.