# Post-Correction Strategies
# for Perturbed Nonsmooth Equations

**<u>R. Griesse</u>[1], T. Grund[2], and D. Wachsmuth[3]**

**Abstract:** Nonsmooth equations arise in many applications, such as contact problems or constrained optimal control problems, and variational inequalities in general. We consider nonsmooth operator equations of the form

$$u = \Pi\big(g(\theta) - G(\theta)u\big)$$

where $G(\theta)$ is an operator with smoothing properties, $u$ denotes the unknown and $\Pi$ is some nonsmooth projection. The problem and hence the solution $u[\theta]$ depend on a parameter $\theta$ which models perturbations. We investigate several post-correction strategies to recover $u[\theta]$ from a nearby nominal solution $u[\theta_0]$. With an appropriate strategy, the approximation error in the $L^\infty$ norm can be shown to be $o(\|\theta - \theta_0\|)$, while for other strategies this holds only in weaker norms. Numerical examples will illustrate our results.

[1]  Johann Radon Institute for Computational and Applied Mathematics
Austrian Academy of Sciences
Altenbergerstrasse 69, A–4040 Linz, Austria
*roland.griesse@oeaw.ac.at*

[2]  Institute of Mechatronics, Technische Universität Chemnitz
Reichenhainer Str. 88, D–09126 Chemnitz, Germany
*thomas.grund@mail.com*

[3]  Institut für Mathematik, Technische Universität Berlin, Sekretariat MA 4–5
Strasse des 17. Juni 136, D–10623 Berlin, Germany
*wachsmut@math.tu-berlin.de*