

**Johann Radon Institute for  
Computational and Applied Mathematics  
der Österreichischen Akademie der Wissenschaften**

**Group Seminar**

**Group: Optimization and Optimal Control**

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**Thursday, June 9, 2016, 10:00**

**Johannes Kepler University, SP2 416-1**

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**Daria Ghilli**

Karl-Franzens-University of Graz

**On nonlocal Hamilton-Jacobi equations related to  
jump processes, some recent results**

We consider Hamilton-Jacobi partial-integro differential equations (PIDEs in short), where the nonlocal terms involve singular integrals with a Lévy type measure of integration. This nonlocal terms naturally arise when studying the infinitesimal generator of discontinuous Lévy processes. In order to treat the singular terms in a fully nonlinear framework, it is necessary to use a viscosity solution theory in a suitably adapted form. First we review some basic features of the theory, then we focus on some recent results concerning Neumann-boundary value problems for these PIDEs. In particular, we show the occurrence of new nonlocal phenomena not encountered in the case of continuous processes and PDEs. We adopt an analytical approach, i.e. we work directly with the generator and not with the process itself.