

## **Smoothness of norms and the structure of Banach spaces**

Gilles Godefroy, Jussieu Mathematics Institute

Abstract:

Any continuous convex function, and in particular any continuous norm, is one-sided directionally differentiable at every point. However, two-sided directional differentiation may hold in some (or every) non-zero points, and moreover various uniformities may occur. The relations between such uniformities and the structure of Banach spaces is now well-understood, even if some questions remain open. We will survey this theory, and focus in particular on strong sub-differentiability and on uniform Gateaux-smoothness.