

## Seminar Optimization and Equilibrium

**Title: Enlargements of the Moreau-Rockafellar Subdifferential**

**Speaker: Prof. Michel Théra, University of Limoges, France**

### Abstract:

The Moreau–Rockafellar subdifferential is a highly important notion in convex analysis and optimization theory. But there are many functions which fail to be subdifferentiable at certain points. In particular, there is a continuous convex function defined on  $\mathbb{R}^2$ , whose Moreau–Rockafellar subdifferential is empty at every point of its domain.

This talk proposes some enlargements of the Moreau–Rockafellar subdifferential: the  $\sup^*$ -subdifferential,  $\sup$ -subdifferential and symmetric subdifferential, all of them being nonempty for the mentioned function.

These enlargements satisfy the most fundamental properties of the Moreau–Rockafellar subdifferential: convexity,  $\sup^*$ -closedness,  $\sup^*$ -compactness and, under some additional assumptions, possess certain calculus rules.

The  $\sup^*$  and  $\sup$  subdifferentials coincide with the Moreau–Rockafellar subdifferential at every point at which the function attains its minimum, and if the function is upper semi-continuous, then there are some relationships for the other points.

They can be used to detect minima and maxima of arbitrary functions.

**Enlace de la Conferencia: [meet.google.com/unx-gcse-wkn](https://meet.google.com/unx-gcse-wkn)**

**Fecha: Miércoles, 15 de Julio a las 10 Horas (16:00 en Europe)**

<https://eventos.cmm.uchile.cl/optimseminar/seminars/>