Optimal Laser Control of Molecular Orientation Using Automatic Differentiation

A. Ben Haj Yedder (`benhaj@cermics.enpc.fr`)
CERMICS—ENPC
6 et 8 avenue Blaise Pascal
Cit Descartes, Champs sur Marne
77455 Marne la Valle, Cedex 2
France

Abstract. Automatic Differentiation (AD) is a tool to compute the gradient of a function. Given a program defining the cost function, the tool produces as output another program computing the gradient of this function. We have applied AD tools to the computation of gradients utilized in gradient-like algorithms for the laster control of molecular orientation. In this talk, we present the AD tool Odyssee and illustrate its use on a simple example. We also explain in detail the post-processing routine we developed for the gradient produced by Odyssee in the case of the orientation problem.