  On-line >>   *Abstract*

The connection between the minimal elastic compliance problem and Monge transport involving the euclidean metric cost has been evidenced in the year 1997. The aim of this paper is to renew this connection and adapt it to some variants in optimal design, focusing in particular on the optimal pre-stressed membrane problem. We show that the underlying metric cost is associated with an unknown maximal monotone map which maximizes the Monge-Kantorovich distance between two measures. (..)