# Jerk-limited trajectory tracking with vibration constraints for multi-axis manipulators

Mohamed Amine Rahmouni*[1], Richard Bearee[1], Mathieu Grossard[2], and Eric Lucet[3]

[1]Laboratoire d'Ingénierie des Systèmes Physiques et Numériques – École Nationale Supérieure dÁrts et Métiers, École Nationale Supérieure dÁrts et Métiers, École Nationale Supérieure dÁrts et Métiers, École Nationale Supérieure dÁrts et Métiers – France

[2]CEA LIST Laboratoire de Robotique Interactive – CEA/ DRT/LIST – France

[3]CEA LIST Laboratoire de Robotique Interactive – CEA/ DRT/LIST : CEA/DRT/LIST – France

**Résumé**

*In this paper, a technique to improve the accuracy of multi-axis robot manipulators is addressed. The manipulation of flexible loads and/or the inherent flexible structure of the manipulator induce undesirable vibration at the load/end-effector level which result in motion inaccuracy. The addressed study gives better insight into the ability of the jerk-limited profile along the time synchronization to reduce the residual vibration and guarantee a precise tracking of the prescribed trajectories. For online filtering shaper, a proper compensation scheme has been put forwards in order to achieve a consistent synchronization between the different axis trajectories of the manipulator. The results of simulations have shown the effectiveness and the feasibility of different approaches for industrial robot applications.*

*Intervenant