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Tracking Control of Networked Multi-Agent Systems Under
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Abstract

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Abstract:

This paper examines the problem of tracking control of networked multi-agent systems with multiple delays and impulsive effects, whose results are applied to mechanical robotic systems. Four kinds of impulsive effects are taken into account: 1) both the strengths of impulsive effects and the number of nodes injected with impulses are time dependent; 2) the strengths of impulsive effects occur according to certain probabilities and the number of nodes under impulsive control is time varying; 3) the strengths of impulses are time varying, whereas the number of nodes with impulses takes place according to certain probabilities; 4) both the strengths of impulses and the number of nodes with impulsive control occur according to certain probabilities. By utilizing the comparison principle, criteria are established for these different cases and a relationship between the frequencies (occurrence probabilities) of impulses and systems' parameters is unveiled. Finally, an example for tracking control of robotic systems is provided to show the effectiveness of the presented results.

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Contents

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Export to Collabratec	Authors Author image of Yang Tang Yang Tang Key Lab. of Adv. Control & Optimization for Chem. Processes, East China Univ. of Sci. & Technol., Shanghai, China Yang Tang (M'11) received the B.S. and Ph.D. degrees in electrical engineering from Donghua University, Shanghai, China, in 2006 and 2010, respectively. From 2008 to 2010, he was a Research Associate with The Hong Kong Polytechnic University, Kowloon, Hong Kong. From 2011 to 2013, he was an Alexander von Humboldt Research Fellow with Humboldt University of Berlin, Berlin, Germany. He was a Visiting Research Fellow with Brunel University, London, U.K., in 2012. From 2013 to 2015, he was a Research Scientist with the Potsdam Institute for Climate Impact Research, Potsdam, Germany, and the Humboldt University of Berlin. Since 2015, he has been a Professor with East China University of Science and Technology, Shanghai, China. He has published more than 50 refereed papers in international	Citations
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