

# Slip control for deep sea mining vehicle: Sliding mode control approach

Hua Ouyang, Sui Ping Wang

School of Engineering

## Abstract

The paper discusses the slip control problem of a type of deep-sea mining vehicle (DSMV) which is driven by valve controlled hydraulic motors. The dynamics of the DSMV on a slope with a side angle is considered and the mathematical model of relationship between traction force and resistances is established for slip control purpose. A sliding mode control algorithm is proposed to decrease the slip of the vehicle through adjusting the slip ratio of the tracks of the DSMV and an approach is developed to obtain the optimal slip rate. The simulations validate the efficacy of the proposed approach.

Original language	English
Title of host publication	Proceedings of the 35th Chinese Control Conference, CCC 2016
Publisher	<u>IEEE Computer Society</u>
Pages	6233-6238
Number of pages	6
Volume	2016-August
ISBN (Electronic)	9789881563910
State	Published - Aug 26 2016
Event	35th Chinese Control Conference, CCC 2016 - Chengdu, China

Ouyang, H., & Wang, S. P. (2016). Slip control for deep sea mining vehicle: Sliding mode control approach. In *Proceedings of the 35th Chinese Control Conference, CCC 2016*. (Vol. 2016-August, pp. 6233-6238). [7554336] IEEE Computer Society. DOI: 10.1109/ChiCC.2016.7554336