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Future works

Future works will aim to implement the L_1 adaptive control in the experimental setup in order to compare results and experimentally validate the controller.

It will include an analysis of the optimized moment to turn on the proposed motor in J_1 , and quantify the minimum required torque in this motor to eliminate the stick-slip of the system. The approach of using a secondary torque source in J_1 to eliminate the stick-slip showed good results but require a deep study of its characteristics to fully understand the phenomena involved.

It is also of interest to analyze the behavior of the system with different models for the friction between the J_1 inertia and the pin. Models from literature fitted from experimental studies with real oil drilling equipments should be the first to be studied in the sequence.

As the L_1 adaptive control showed good results controlling highly flexible systems with friction, it should be interesting to apply this control law to other types of flexible systems than the torsional slender model studied.