

## FMH606 Master's Thesis

**Title:** Tuning PID Controllers for Double Integrating Plus Time Delay (DIPTD) processes

**USN supervisor:** David Di Ruscio

**External partner:** None

**Task background:**

Recently methods for tuning PI/PID and PD/PID for Integrating and Double Integrating Plus Time Delay ([IPTD](#) and [DIPTD](#)) processes have been published. See [also](#). There also is a new PID tuning method in MATLAB, the pidtune.m, algorithm. It would be of grate interest to compare these algorithms.

As an DIPTD example process for tuning PD/PID controllers, a double integrating process for describing a vessel movement may be used. This may be used to formulate a Dynamic Positioning system for a marine vessel. The [OSP simulator](#) may also be used for testing the controllers.

**Task description:**

1. Give a literature survey of methods for tuning PID controllers for DIPTD plants, in particular the DIPTD and the pidtune.m methods.
2. Compare the different methods by simulation experiments using MATLAB or similar (Octave/Python). Random SSMs generated from the MATLAB rss.m or drss.m functions may be used in order to generate models for tuning the PI/PID controllers. A laboratory physical process may also be used for the experiments.

**Student category:** IIA students


**Practical arrangements:**

None.

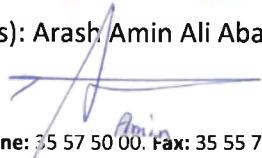
**Supervision:**

As a general rule, the student is entitled to 15-20 hours of supervision. This includes necessary time for the supervisor to prepare for supervision meetings (reading material to be discussed, etc).

**Signatures:**

Supervisor (date and signature): 12/4-23 

Student (write clearly in all capitalized letters): Arash Amin Ali Abadi, 230757

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