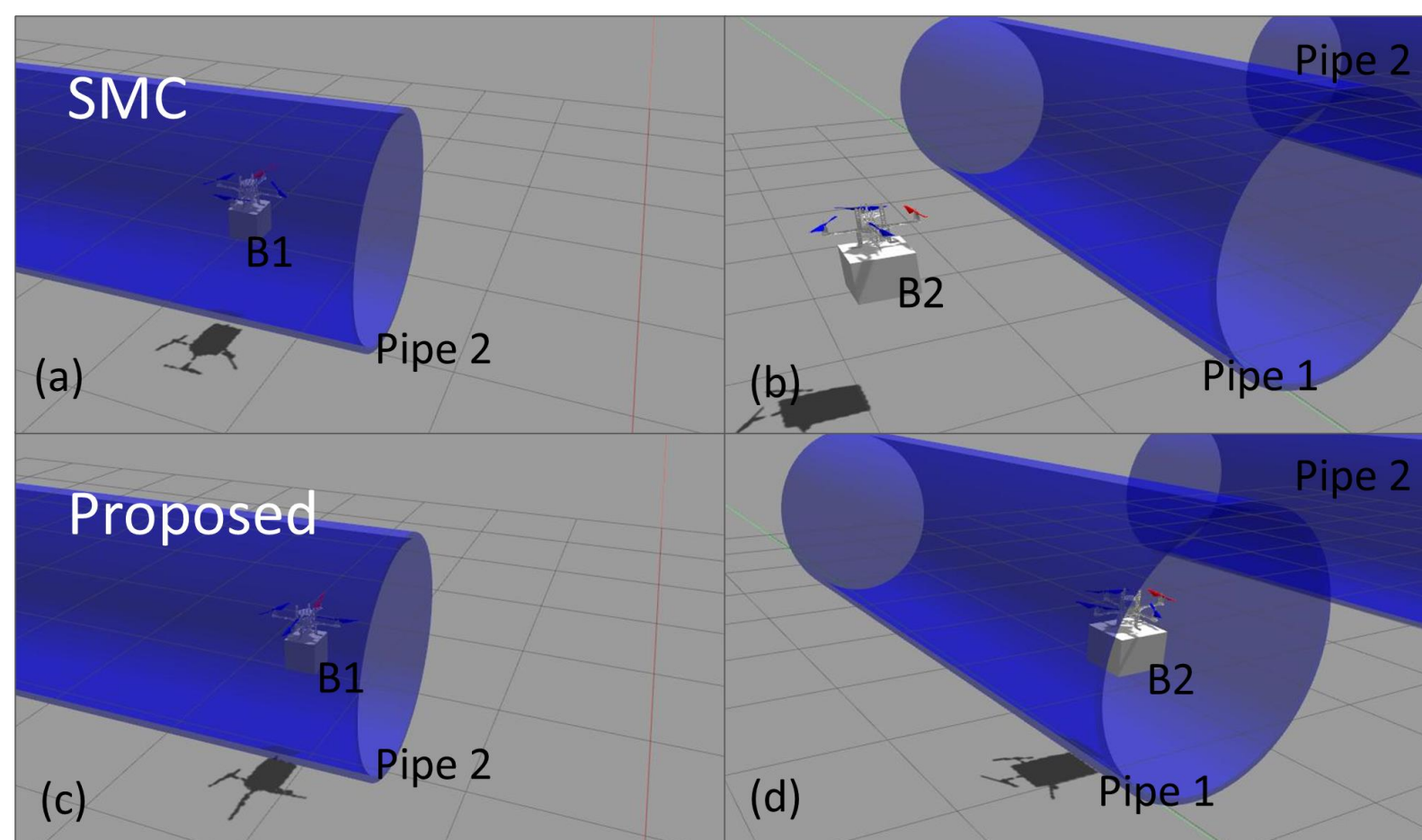# Robust Manoeuvring of Quadrotor under Constrained Space and Predefined Accuracy

Abstract

A robust controller that enables the quadrotor to follow a trajectory with predefined tracking accuracy in constrained space under uncertainties stemming from imprecise system modelling and external disturbances.

Contributions

- A BLF-based robust controller for quadrotor is formulated, which can tackle uncertain system dynamic parameters, payload and external disturbances.
- Constraints are imposed on all six degrees-of-freedom, i.e., on three position and three attitude angles, to make the control problem more suitable under space constraints.
- Closed loop stability is verified with Lyapunov-based method for finite time convergence.
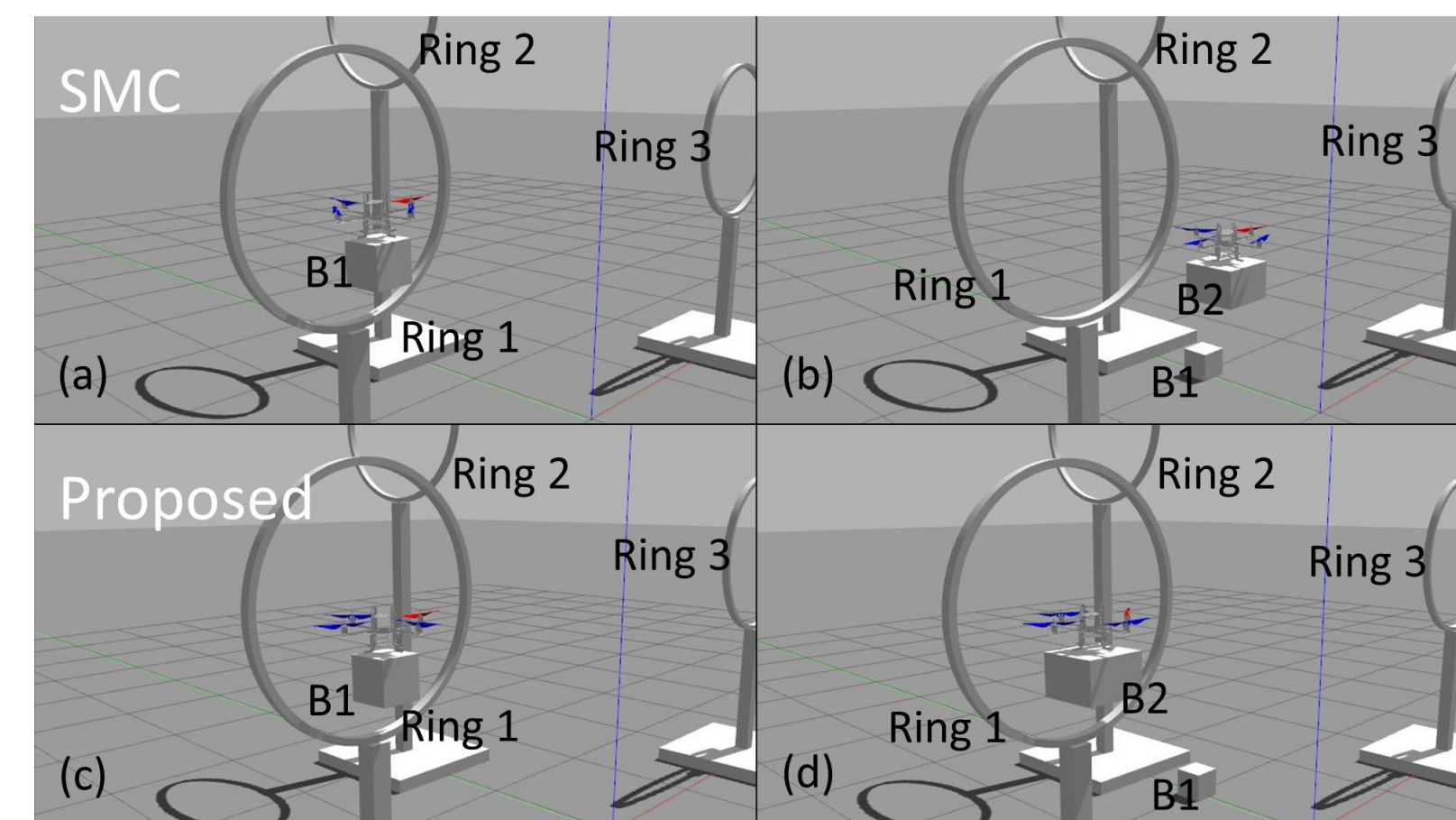
Advantages

- Both position and attitude error does not go beyond a pre-defined bound.
- Optimized tracking of trajectory.
- Robust to variations of mass and inertia of payload.

Authors: Viswa Narayansn S., Sourish Ganguly Dr. Spandan Roy

Research Center Name: Robotics Research Center