

Abstract Submitted
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Trade-offs for feedback control of the linearized Ginzburg-Landau system SIMON ILLINGWORTH, STEPHAN OEHLER, University of Melbourne — We consider feedback control of the linearized Ginzburg-Landau system. The particular focus is on any trade-offs present in the single-input single-output control problem. The work is in three parts. First, we consider the estimation problem in which a single sensor is used to estimate the entire flow field (without any control). By considering the optimal sensor placement with varying system stability, a fundamental trade-off for the estimation problem is made clear. Second, we consider the full-information control problem in which the entire flow field is known, but only a single actuator is available for control. We show that a similar trade-off exists when placing the single actuator. Third, we consider the overall feedback control problem in which only a single sensor is available for measurement; and only a single actuator is available for control. By varying the system stability, a similar fundamental trade-off is made clear. Implications for effective feedback control with a single sensor and a single actuator are discussed.

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