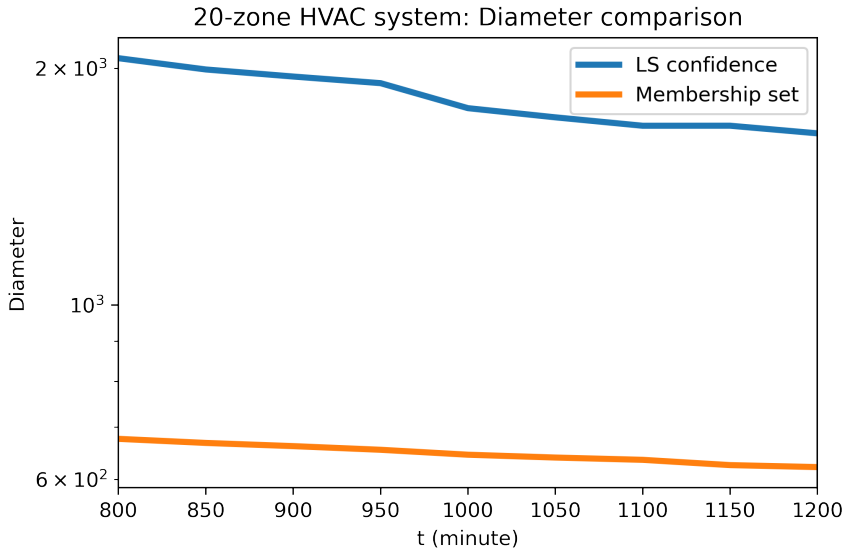

Figure 1: **Simulation of a 20-zone HVAC system.** This figure provides a comparison of the diameters of set membership and least square's confidence intervals in [Simchowitz & Foster 2021]. **Experiment setting:** consider the 20-zone HVAC system in [R13], where the state $x_t \in \mathbb{R}^{20}$ denotes the indoor temperature of the 20 zones, $u_t \in \mathbb{R}^{20}$ denotes the control inputs of each zone that are related to the air flow rates of the HVAC system. The disturbance is $w_t := T_t^{\text{out}} * \text{ones}(20, 1)$ where T_t^{out} is the outdoor temperature at time t. The real-world temperature data is taken from the HouseZero Program. For both LSE and SM, we assumed the disturbances T_t^{out} are bounded between $0°C$ to $40°C$, which are conservative bounds for the temperature of the day (the real outdoor temperature never hits either boundaries and remains around $20°C - 29°C$). **Observation:** SM's set diameters are smaller than LS's confidence intervals for this moderate-sized ($n_x = 20$) HVAC system.