



**Figure S1: Model lattice arrangement.** The model simulates a semi-infinite lattice with four myosin and eight actin filaments, as in Tanner et al., 2007. The bolder filaments and cross-bridge interactions are those which are directly simulated, while the desaturated filaments are the bold filaments mirrored across a boundary. Cross-bridge interactions that cross a boundary condition to a mirrored thin filament are connected only to their non-mirrored thick filament. This lattice geometry is used as it is the smallest arrangement of thick and thin filaments that: 1) maintains the physiological ratio of thick to thin filaments and 2) permits tessellation of the existing filaments without causing a single thick filament to face a thin filament more than once.