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Improved blowup time estimate for fourth-order damped wave equation with strain term at arbitrary positive initial energy

By proposing a new differential inequality, we improve the upper bound of the blowup time estimate for the nonlinear fourth-order damped wave equation with strain term at arbitrary positive initial energy. We also give two new initial conditions to expand the range of the initial data leading to the finite time blowup of solutions. We obtain a sharp result of finite time blowup for the special case of the new differential inequality. Some simulations exhibit and verify the main results.