AMATH 568
Winter Quarter 2023
Professor J. Nathan Kutz

HOMEWORK #7: Due – March 3, 2023

1. Consider the Optical Parametric Oscillator as given in Lecture 23 of the notes (Pages 99-102)

(a) Assuming slow time $\tau = \epsilon^2 t$ and slow space $\xi = \epsilon x$, derive the Fisher-Kolmogorov equation for the slow evolution of the instability (the expression after Eq. (518))

(b) Derive the Swift-Hohenberg type expression which is governed by Eq. (519) with the scalings detailed in the notes.