

# Spectral Properties of the J-Self-Adjoint Operator Associated with the Periodic Heat Equation

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The periodic heat equation has been derived as a model of the dynamics of a thin viscous fluid on the inside surface of a cylinder rotating around its axis. It is well known that the related Cauchy problem is generally ill-posed. We study the spectral properties of the J-self-adjoint operator associated with this equation. We will prove that this operator has compact inverse and does not have real eigenvalues. We shall also present numerical results. Some open questions will be stated.