

# BACKPROPAGATION IN CHAOTIC NEURAL NETWORKS

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## 1. INTRODUCTION

1.1. Literature review.

1.2. Main results.

## 2. UNSTABLE NEURAL NETWORKS

2.1. Lyapunov spectrum.

2.2. Lyapunov vectors.

2.3. Adjoint Lyapunov spectrum and duality.

## 3. BACKPROPAGATION UNDER GRADIENT EXPLOSION

3.1. Conventional difficulty.

3.2. Backpropagation via adjoint shadowing.

3.3. Kernel differentiation method.

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