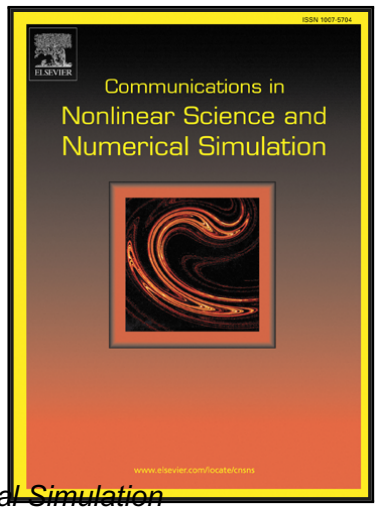

Discrete Morse flow for Ricci flow and porous medium equation

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DISCRETE MORSE FLOW FOR RICCI FLOW AND POROUS MEDIUM EQUATION

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ABSTRACT. In this paper, we study the discrete Morse flow for the Ricci flow on the American football, which is the 2-sphere with the north and south poles removed and equipped with a metric g_0 of constant scalar curvature, and for the porous medium equation on a bounded regular domain in the plane. We show that under suitable assumptions on the initial metric $g(0)$ one has a weak approximate discrete Morse flow for the approximated Ricci flow and porous medium equation on any time interval.

Mathematics Subject Classification 2010: 53C44, 35K50,93C55.

Keywords: Discrete Morse flow, Ricci flow, porous medium equation, conical singularities.

1. INTRODUCTION

There are relatively few results about computational models for the Ricci flow in two dimensions [9] (see also [8] and [18] for related references). The purpose of this paper is to probe this area by providing some approximate computational models, namely the discrete Morse flow for the two

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