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ABSTRACT. Cold sets and freezing sets belong to the theory of (approximate) fixed points for continuous self-maps on digital images. We study some properties of cold sets for digital images in the digital plane, and we examine some relationships between cold sets and freezing sets.

1. INTRODUCTION

Digital topology is concerned with exploring topological and geometric properties of digital images as stored in computer memory, i.e., as sets of discrete pixels, usually treated as graphs in which some notion of “nearness” determines adjacency. Pioneering publications in the discipline include [20, 21, 19, 18]. Considerable success has been obtained in showing that digital images and the Euclidean objects they represent are often similar with respect to properties such as connectedness, fundamental group, contractibility, retraction, et al. However, the discrete and usually finite nature of a graph often constricts continuous functions on digital images in ways unmatched by similar limitations for continuous functions on Euclidean objects. Among these restrictions are those associated with cold sets and freezing sets.

Cold sets and freezing sets were introduced in [7] in order to study properties of fixed points and approximate fixed points in digital topology.

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