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Some comments on 'The gradient structure of a flow: I'

This previously unpublished work of Charles Conley contains a fundamental theorem to the effect that every flow on a compact metric space decomposes into a chain recurrent part and a gradient-like part. This important result appears as item II6.3A in the book *Isolated Invariant Sets and the Morse Index* but the proof appears in the present work. In addition, the concepts of chain recurrence and of Morse decomposition appeared for the first time in this paper. These ideas led Conley to his program of understanding very general flows as collections of isolated invariant sets linked by heteroclinic orbits.

The paper is being published as Conley wrote it, in spite of the fact that some of the ideas have evolved in the interim. One noteworthy change is in the definition 2.1B and the lemma 2.2A which follows it. These do not quite work as they stand as Conley himself indicated in the margins of selected copies of the paper. A better definition of *attractor neighbourhood* is: a closed subset N of X such that $\omega(\overline{N}, f)$ lies in the interior of N. In any case, the theorems about attractors in § 2 of the paper are true even if the proofs require some modification (see section II5 of the book cited above).

The reader who looks beyond the minor flaws will be amply rewarded.

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