

ON TOPOLOGY OF MANIFOLDS ADMITTING A GRADIENT-LIKE FLOW WITH A PRESCRIBED NON-WANDERING SET

*V. Z. Grines, E. Ya. Gurevich, V. S. Medvedev,
and E. V. Zhuzhoma*

We study relations between the structure of the set of equilibrium points of a gradient-like flow and the topology of the support manifold of dimension 4 and higher. We introduce a class of manifolds that admit a generalized Heegaard splitting. We consider gradient-like flows such that the non-wandering set consists of exactly μ node and ν saddle equilibrium points of indices equal to either 1 or $n - 1$. We show that, for such a flow, there exists a generalized Heegaard splitting of the support manifold of genus $g = \frac{\nu - \mu + 2}{2}$. We also suggest an algorithm for constructing gradient-like flows on closed manifolds of dimension 3 and higher with prescribed numbers of node and saddle equilibrium points of prescribed indices.

Key words and phrases: gradient-like flows on manifolds, Heegaard splitting, relations between dynamics and topology.

*Grines Vyacheslav Zigmundovich
Gurevich Elena Yakovlevna
Zhuzhoma Evgenij Viktorovich
Medvedev Vladislav Sergeevich*

National Research University,
Higher School of Economics,
Nizhniy Novgorod, 603155 Russia.
E-mail: vgrines@yandex.ru,
els93@yandex.ru,
medvedev@unn.ac.ru,
zhuzhoma@mail.ru

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