Turkish Journal of Mathematics

Turkish Journal

of

Mathematics

Keywords
Authors

math@tubitak.gov.tr

Scientific Journals Home Page

A monopole homology for integral homology 3-spheres

Weiping LI
Department of Mathematics, Oklahoma State University
Stillwater, Oklahoma 74078-0613
e-mail: wli@@math.okstate.edu

Abstract: To an integral homology 3-sphere Y, we assign a well-defined {\mathbb Z}-graded (monopole) homology $MH_*(Y, I_\eta(\Theta; \eta_0))$ whose construction in principle follows from the instanton Floer theory with the dependence of the spectral flow $I_\eta(\Theta; \eta_0)$, where Θ is the unique U(1)-reducible monopole of the Seiberg-Witten equation on Y and η_0 is a reference perturbation datum. The definition uses the moduli space of monopoles on Y \times {\mathbb R} introduced by Seiberg-Witten in studying smooth 4-manifolds. We show that the monopole homology $MH_*(Y, I_\eta(\Theta; \eta_0))$ is invariant among Riemannian metrics with same $I_\eta(\Theta; \eta_0)$. This provides a chamber-like structure for the monopole homology of integral homology 3-spheres. The assigned function MH_{SWF}: \{$I_\eta(\Theta; \eta_0)$\} \to \{$MH_*(Y, I_\eta(\Theta; \eta_0))$\} is a topological invariant (as Seiberg-Witten-Floer Theory).

Turk. J. Math., **27**, (2003), 125-160.
Full text: pdf
Other articles published in the same issue: Turk. J. Math.,vol.27,iss.1.