1017-57-9 **Vladimir V. Chernov\*** (`Vladimir.Chernov@dartmouth.edu`), Mathematics Department, 6188 Bradley Hall, Dartmouth College, Hanover, NH 03755, and **Yuli B Rudyak**, Department of Mathematics, 358 Little Hall, University of Florida, Gainesville, FL 32611-8105. *Affine Linking Invariants.*

Let $N_1, N_2, M$ be smooth oriented manifolds such that $dim N_1 + dim N_2 + 1 = dim M$, and assume moreover that $N_1, N_2$ are closed. Let $\phi_i$, $i = 1, 2$, be smooth mappings of $N_i$ to $M$ such that $Im \phi_1 \cap Im \phi_2 = \emptyset$. The classical linking number $lk(\phi_1, \phi_2)$ is defined only if $\phi_{1*}[N_1] = \phi_{2*}[N_2] = 0$ in $H_*(M)$ or in $H_*(M, \partial M)$; or if $\phi_{1*}[N_1] = \phi_{2*}[N_2]$ are torsion classes.

We generalize linking numbers to the case of $\phi_{1*}[N_1], \phi_{2*}[N_2]$ with arbitrary homology classes. This new invariant is called an "affine linking invariant" $alk$. When $lk$ is defined, $alk$ is a splitting of $lk$ into a collection of independent invariants and it projects to $lk$ under augmentation. This $alk$ is a universal Vassiliev-Goussarov invariant of order $\leq 1$. When $N_1 = N_2 = S^1$ and $M$ is three-dimensional this is related to the works of Kalfagianni, Kirk-Livingston, and Schneiderman. (Received October 26, 2005)