1072-57-188 **Patricia Cahn*** (patricia.cahn@dartmouth.edu), 6188 Kemeny Hall, Dartmouth College, Hanover, NH 03755, and **Vladimir Chernov**. *Algebras Counting Minimal Intersection and Self-Intersection Numbers of Loops on a Surface.*

It is natural to ask how to compute the minimum number of intersection points $m(\alpha, \beta)$ of loops in two given free homotopy classes α and β, and the minimum number of self-intersection points $m(\alpha)$ of a loop in a given class α. We show that for $\alpha \neq \beta$ the number of terms in the Andersen-Mattes-Reshetikhin Poisson bracket of α and β is equal to $m(\alpha, \beta)$. Chas found examples showing that a similar statement does not, in general, hold for the Goldman Lie bracket of α and β. The proof in the case where the given classes do not contain different powers of the same loop first appeared in work of the second author. To prove the result for any classes $\alpha \neq \beta$, we had to use techniques developed by the first author, who proved that if one generalizes the Turaev cobracket in the spirit of the Andersen-Mattes-Reshetikhin algebra, the number of terms in the resulting operation $\mu(\alpha)$ gives a formula for $m(\alpha)$, and furthermore, $\mu(\alpha) = 0$ if and only if α is a power of a simple class. Again, Chas showed that similar statements do not hold for the Turaev cobracket. (Received June 27, 2011)