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Ilya Kapovich* (kapovich@math.uiuc.edu), UIUC Department of Mathematics, 1801 West Green Street, Urbana, IL 61801, and **Martin Lustig** (Martin.Lustig@univ-cezanne.fr), , France. *Geometric Intersection Number and analogues of the Curve Complex for free groups.*

For the free group F_N of finite rank $N \geq 2$ we construct a canonical Bonahon-type continuous and $Out(F_N)$ -invariant *geometric intersection form*

$$\langle, \rangle: \overline{cv}(F_N) \times Curr(F_N) \rightarrow \mathbb{R}_{\geq 0}.$$

Here $\overline{cv}(F_N)$ is the closure of unprojectivized Culler-Vogtmann's Outer space $cv(F_N)$ in the equivariant Gromov-Hausdorff convergence topology (or, equivalently, in the length function topology). It is known that $\overline{cv}(F_N)$ consists of all *very small* minimal isometric actions of F_N on \mathbb{R} -trees. The projectivization of $\overline{cv}(F_N)$ provides a free group analogue of Thurston's compactification of the Teichmüller space. As an application, using the *intersection graph* determined by the intersection form, we show that several natural analogues of the curve complex in the free group context have infinite diameter. (Received January 18, 2008)