1023-03-1545 **Sheila K Miller*** (sheila.miller@colorado.edu), University of Colorado, Campus Box 395, Boulder, CO 80309. *On the Free Left Distributive Algebra on κ-many Generators.* Preliminary report.

The left distributive algebras (algebras satisfying the LD-law $a(bc) = (ab)(ac)$) which occur in classical math are idempotent, hence not free. The free left distributive algebra $\mathcal{A}_1 = \mathcal{A}$ on one generator is representable as the span of an elementary embedding $j : V_\lambda \to V_\lambda$ (Laver) and is a subset of the braid group under a certain operation (Dehornoy). We will present a division theorem for the elements of $\mathcal{A}_\kappa$. The algorithm, improving one of Laver for the one generator case, takes place not in $\mathcal{A}_\kappa$ but in $\mathcal{P}_\kappa$– the result of enlarging $\mathcal{A}_\kappa$ to freely add a composition operation. Ways in which $\mathcal{A}$—and more generally $\mathcal{A}_\kappa$—are known or conjectured to be "well-founded" will be discussed. (Received September 26, 2006)