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Cubical Sets*. Preliminary report.

Let $P = I_1 \times \cdots \times I_d \subset \mathbb{R}^d$ be an elementary cube with $\dim(P) = k$. In this talk, we define lower hull and in turn the maximal lower hull of P . For each cube P and $0 \leq i \leq k$, we construct a set of monomials $\mathcal{M}(\mathcal{K}_i(P))$ and an ideal I_i generated by this set. For any admissible monomial order, if $G_i = G(I_i)$ is the reduced Gröbner basis of I_i , then G_i is generated by those generators of I_i that are associated with the elementary cubes and constitute the maximal i -lower hull of P . (Received September 16, 2014)