1046-14-1239 **Mark E Huibregtse*** (`mhuibreg@skidmore.edu`), Dept. of Mathematics and Computer Science, Skidmore College, Saratoga Springs, NY 12866. *Some syzygies of the generators of the ideal of a border basis scheme.* Preliminary report.

Let K be an alg. closed field, $\mathrm{char}(K) = 0$. An $\mathcal{O}$-border basis scheme $\mathbb{B}_{\mathcal{O}}$ [Kreutzer and Robbiano, Deformations of Border Bases, Collect. Math. 59, no. 3 (2008)] parameterizes the ideals $I \subseteq K[x_1, \ldots, x_n]$ such that $K[\mathbf{x}]/I$ has K-basis the order ideal $\mathcal{O} = \{t_1, \ldots, t_\mu\}$. Any such I has (unique) generators of the form $g_j = b_j - \sum_{i=1}^{\mu} c_{ij} t_i$, $1 \leq j \leq \nu$, where $\{b_1, \ldots, b_\nu\} = (x_1\mathcal{O} \cup \cdots \cup x_n\mathcal{O}) \setminus \mathcal{O}$ is the border of $\mathcal{O}$. Viewing the c_{ij} as variables, one has that $\mathbb{B}_{\mathcal{O}} \subseteq \mathrm{Spec}(K[(c_{ij})])$ is cut out by the entries ρ_{pq}^{kl} of the basic commutators $\mathcal{A}_k\mathcal{A}_l - \mathcal{A}_l\mathcal{A}_k$ of the matrices representing multiplication by $x_k \neq x_l$ on $K[(c_{11}, \ldots, c_{\mu\nu})][x_1, \ldots, x_n]/(g_j)$. We construct syzygies of the ρ_{pq}^{kl} by taking traces of products of the $\mathcal{A}_k$ and the basic commutators that reduce to commutators. The simplest examples are: $\mathrm{Tr}(\mathcal{A}_k\mathcal{A}_l - \mathcal{A}_l\mathcal{A}_k) = \sum_{i=1}^{n} \rho_{ii}^{kl} = 0$. (Received September 15, 2008)