Given a basis $B = [b_1 b_2..b_n]$ with Gram Schmidt Orthogonalization $\widetilde{B} = [\tilde{b}_1 \tilde{b}_2..\tilde{b}_n]$, where

$$\tilde{b}_i = b_i - u_{i,1} * \tilde{b}_1 - ... - u_{i,i-1} * \tilde{b}_{i-1}; 1 \leq i \leq n \text{ and}$$
$$u_{i,j} = \frac{\langle b_i, \tilde{b}_j \rangle}{\langle \tilde{b}_j, \tilde{b}_j \rangle}; 1 \leq j < i \leq n.$$

Then the following properties are satisfied by an L3-reduced B

1. $|u_{i,j}| \leq \frac{1}{2}$ for $1 \leq j < i \leq n$

2. $\delta * \|\tilde{b}_i\|^2 \leq \|u_{i+1,i} * \tilde{b}_i + \tilde{b}_{i+1}\|^2$

3. $det(\Delta) \leq \Pi_{i=1}^{n} \|b_i\| \leq det(\Delta) * (\Pi_{i=1}^{n} (1 + \frac{\alpha}{4} * (\frac{\alpha^{i-1} - 1}{\alpha - 1})))^{\frac{1}{2}}$ where $\alpha = \frac{1}{\delta - 1/4}$

4. $\|b_j\| \leq \alpha^{\frac{i-j}{2}} * (1 + \frac{\alpha}{4} * (\frac{\alpha^{i-1} - 1}{\alpha - 1}))^{\frac{1}{2}} * \|\tilde{b}_i\|$, for all $i > j$

5. $\|b_1\| \leq \alpha^{\frac{n-1}{4}} * det(\Delta)^{\frac{1}{n}}$

6. For $x \in \Delta$ and $x \neq 0, \|b_1\| \leq \alpha^{\frac{n-1}{2}} \|x\|$