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Ishwari Jang Kunwar* (ikunwar3@math.gatech.edu). *Multilinear dyadic operators and their commutators.*

Paraproduct decomposition of the pointwise product of two functions is given by

$$f_1 f_2 = \sum_{I \in \mathcal{D}} \widehat{f}_1(I) \langle f_2 \rangle_I h_I + \sum_{I \in \mathcal{D}} \langle f_1 \rangle_I \widehat{f}_2(I) h_I + \sum_{I \in \mathcal{D}} \widehat{f}_1(I) \widehat{f}_2(I) h_I^2,$$

where $h_I = \frac{1}{\sqrt{|I|}} (\mathbf{1}_{I_+} - \mathbf{1}_{I_-})$, $\widehat{f}_i(I) = \langle f_i, h_I \rangle_{L^2}$, $\langle f_i \rangle_I = \frac{1}{|I|} \int_I f_i$, and \mathcal{D} is the standard dyadic grid on \mathbb{R} . In this talk, I will present a generalization of this decomposition to the pointwise product of $m \geq 2$ functions. On the basis of this decomposition, I will define multilinear dyadic paraproducts and Haar Multipliers, and discuss their boundedness properties. Finally, I will present a characterization of dyadic BMO functions in terms of boundedness of the commutators of those multilinear dyadic operators. (Received September 22, 2015)