1172-42-23 **Weiyan Huang*** (huangweiyan@wustl.edu). *Weighted Inequalities for Haar multipliers.*

Harmonic analysis studies the boundedness of operators in Lebesgue spaces. Dyadic arguments play an important role in this topic. In $\mathbb{R}$, the dyadic grid $\mathcal{D}$ consists of intervals of the form $I = [m2^{-k}, (m+1)2^{-k})$, where m, k are integers. Each dyadic interval I is associated with a Haar function h_I, and the collection of Haar functions $\{h_I\}_{I\in\mathcal{D}}$ forms an orthonormal basis of $L^2(dx)$. A Haar multiplier is an operator T who has the form $Tf(x) = \sum_{I\in\mathcal{D}} c(x,I) < f, h_I > h_I(x)$, where $c(x,I)$ is a function on $\mathbb{R} \times \mathcal{D}$. In 1998, Katz and Pereyra studied a class of Haar multipliers T_w^t whose coeeficients are given by $c(x,I) = \frac{w^t(x)}{(m_I w)^t}$, where w is a weight on $\mathbb{R}$ and $m_I w$ denotes its average on I. The authors proved the sufficient and necessary conditions on the weight w for T_w^t to be bounded on $L^p(dx)$. In this talk, we will talk about the weighted version of this result; that is, we will see some sufficient and necessary conditions for T_w^t to be bounded on $L^p(vdx)$ where w, v are weights on $\mathbb{R}$. We will also talk about some analogues of such Haar multipliers in spaces of homogeneous type and analogous results. (Received August 04, 2021)