Title: On the Bekollé-Bonami weights on general domains in R^n

Abstract: In a seminal paper in 1978, Bekollé and Bonami introduced in the unit disc $\mathbb{D}$ the notion of the so called *B_p-weights*. A weight ω defined on $\mathbb{D}$ is called a B_p-weight, $1 < p < \infty$, if

$$\sup \Big(\frac{1}{|Q_I|}\int_{Q_I}\omega\Big)\Big(\frac{1}{|Q_I|}\int_{Q_I}\omega^{\frac{-1}{p-1}}\Big)^{p-1} < \infty,$$

where Q_I denotes the *Carleson box* associated to the arc $I \subset \partial\mathbb{D}$.

Such weights naturally appeared when studying weighted Lebesgue space estimates for the Bergman projection. The Bergman projection P_B, given by

$$P_B f(z) = \frac{1}{\pi}\int_{\mathbb{D}} \frac{f(\xi)}{(1-\bar{\xi}z)^2} dm(\xi),$$

is the orthogonal projection from $L^2(\mathbb{D}, dm)$ onto the Bergman space $A^2(\mathbb{D})$ which is the set of analytic functions in $L^2(\mathbb{D}, dm)$. Bekollé and Bonami proved that the Bergman projection P_B is bounded on the weighted space $L^p(\mathbb{D}; \omega dm), 1 < p < \infty$ if and only if ω is a B_p-weight.

The purpose of this talk is to extend the definition of Bekollé-Bonami weights to domains in $\mathbb{R}^n$, $n \geq 2$, investigate their properties and establish Carleson-type embedding theorems analogous to the ones existing in the classical setting. It turns out that, in this context, the geometry of the domain plays a decisive role.