

# THE $A_\infty$ CLASS OF WEIGHTS AND SOME OF ITS EXTENSIONS

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It is well known the relevance of the  $A_\infty$  class of weights of B. Muckenhoupt in many contexts of Mathematics and in particular in Harmonic Analysis and Elliptic PDE. There exists an interesting larger class of weights denoted by  $C_p$  which was also introduced by B. Muckenhoupt and was considered later on by E. Sawyer and K. Yabuta. Originally, the  $C_p$  class of weights "connects" the  $L^p$  norms of classical singular integrals and the Hardy-Littlewood maximal function very closely by means of the classical good- $\lambda$  inequality technique. After a review of the history of both classes of weights we will present some results obtained in a joint work with E. Cejas, K. Li and I. Rivera-Rios and more recently with S. Ombrosi, E. Rela and I. Rivera-Rios. Also I will mention some related interesting results obtained by J. Canto who proved a sort of appropriate reverse Hölder's inequality adapted to the  $C_p$  class. This is a first step to provide quantitative estimates of the classical results obtained by Sawyer and Yabuta.