1030-35-42   **Enrique Zuazua Iriondo*** (`enrique.zuazua@uam.es`), IMDEA-Matematicas & Dpto. de Matematicas, Facultad de Ciencias, Universidad Autnoma de MAdrid, Cantoblanco, 28049 Madrid, Spain. *Decay rates for partially dissipative hyperbolic systems.*

We shall present recent results on the decay rates for linear partially dissipative hyperbolic systems on the whole space. It is by now well known that, under the Shizuta-Kawashima (SK) condition, solutions may be decomposed as a high frequency hyperbolic like component decaying exponentially as time goes to infinity plus a polynomially decaying one corresponding to the low frequencies. We first show that the condition SK is equivalent to the classical Kalman rank condition in finite dmensional control theory arising also in the analysis of hypoellipticity. In view of this, we show that, such a condition is not necessary for this kind of decomposition to hold. We also show that weaker rank conditions yield more general decompositions in which solutions may contain, in particular, components that decay more slowly. This is joint work with Karine Beauchard (ENS, Cachan, France). (Received July 01, 2007)