

On the entropy conditions for some flux limited diffusion equations

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In this talk we give a characterization of the notion of entropy solutions of some flux limited diffusion equations for which we can prove that the solution is a function of bounded variation in space and time. This includes the case of the so-called relativistic heat equation and some generalizations. For them we prove that jump set consists in fronts that propagate at the speed given by Rankine-Hugoniot condition and we give on it a geometric characterization of the entropy conditions. Since entropy solutions are functions of bounded variation in space once the initial condition is, to complete this program we study the time regularity of solutions of the relativistic heat equation under some conditions on the initial datum. An analogous result holds for some other related equations without additional assumptions on the initial condition.

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