On regularity of weak solutions of the relativistic Vlasov–Maxwell system

Nicolas Besse
Observatoire de la Côte d’Azur, Nice, France
Email: Nicolas.Besse@oca.eu

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Abstract

In this talk we investigate the regularity of weak solutions of the relativistic Vlasov–Maxwell system by using Fourier analysis and the smoothing effect of low velocity particles. This smoothing effect has been used by several authors (see [2] and [3]) for proving existence and uniqueness of $C^1$-regular solutions of Vlasov–Maxwell system. This smoothing mechanism has also been used to study the regularity of solutions for a kinetic transport equation coupled with a wave equation (see Bouchut, Golse and Pallard 2004). Under the same assumptions as in the paper [1] we prove a slightly better regularity for the electromagnetic field than the one showed in [1]. Namely, we prove that the electromagnetic field belongs to $H^s_{lo,w}(\mathbb{R}_+^4 \times \mathbb{R}^3)$, with $s = 6/(14 + \sqrt{142})$.

References

