Periodic solutions for the forced relativistic pendulum with a derivative dependence

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We deal with the solvability of the forced pendulum equation subject to relativistic effects. Following some physical insighs, [4, 5], we take into account the relativistic effects in the forces acting on the pendulum, so we are lead to a φ-laplacian equation that presents some differences with respect to previously studied relativistic equations, [1, 3, 6, 7]. In contrast with the standard relativistic pendulum the present φ-laplacian equation contains an unbounded derivative dependent term. In this new setting we recover several results about the structure of the solvability set that are well-known for the classical pendulum and we also show that the solvability set for the classical pendulum is the limit of the relativistic one when the speed of light blows up to infinity.

This talk is based on a joint work with Pablo Amster from the University of Buenos Aires, [2].

References

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