# Global bifurcation of periodic solutions of $S^1$-symmetric autonomous Newtonian systems

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The aim of the talk is to study the phenomenon of global bifurcation of periodic solutions for autonomous Newtonian systems with additional symmetries of the potential.

It is known that for an autonomous systems the space of solutions can be considered with $S^1$-symmetries, given by shift in time. Therefore one can use tools of $S^1$-equivariant topology to study the global bifurcation. However, if the problem has additional symmetries, in some cases one needs more sophisticated tools to detect bifurcation. We consider the equation with $S^1$-symmetry of the potential. Using the degree theory for $T^2$-equivariant gradient maps, we obtain the new bifurcational results and generalize known theorems.