

Isochronous systems are not rare

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A dynamical system is called isochronous if it features an open (hence fully dimensional) region in its phase space in which all its solutions are completely periodic (i. e., periodic in all degrees of freedom) with the same fixed period (independent of the initial data, provided they are inside the isochronicity region). A trick is presented associating to a dynamical system a modified system depending on a real parameter so that when this parameter vanishes the original system is reproduced while when this parameter does not vanish the modified system is isochronous. This technique is applicable to large classes of dynamical systems, justifying the title of this talk. An analogous technique, even more widely applicable - for instance, to any translation-invariant (classical) many-body problem ? transforms a Hamiltonian system to an isochronous Hamiltonian system. This last finding is joint work with Francois Leyvraz.