



Physics > Classical Physics

# On the modelling of spur and helical gear dynamic behaviour

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This chapter is aimed at introducing the fundamentals of spur and helical gear dynamics. Using three-dimensional lumped models and a thin-slice approach for mesh elasticity, the general equations of motion for single-stage spur or helical gears are presented. Some particular cases including the classic one degree-of-freedom model are examined in order to introduce and illustrate the basic phenomena. The interest of the concept of transmission errors is analysed and a number of practical considerations are deduced. Emphasis is deliberately placed on analytical results which, although approximate, allow a clearer understanding of gear dynamics than that provided by extensive numerical simulations. Some extensions towards continuous models are presented.

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