螺旋锥齿轮齿面误差修正 Tooth Surface Correction for Spiral Bevel Gears

苏进展 方宗德 谷建功

西北工业大学

关键词： 螺旋锥齿轮 齿面 误差修正 Free-Form机床

摘 要： 研究了基于数控加工螺旋锥齿轮齿面误差修正技术。提出了一种由摇台型机床调整参数向Free-Form机床转换的方法，建立了基于数控加工齿面误差模型；在此基础上，以齿面误差平方和最小为目标函数，优化摇台型机床调整参数，再将其转换为数控加工形式，从而实现数控齿面修正。最后通过算例表明，经过改变加权系数和优化可以达到齿面误差较高精度修正要求。 Based on NC machining, the tooth surface errors correction of spiral bevel gears was investigated. A new method for the machining settings transformation from cradle-type hypoid generator to Free-Form one was proposed, and the tooth errors mathematical model based on NC machining was established. The minimum of square sum of tooth surface errors was the objective function to optimize the cradle-type hypoid generator machine settings and transform those parameters into NC form so as to realize the NC machining correction of spiral bevel gears. Finally a numerical example was presented. The results showed that it could achieve precise correction after altering relative weight coefficient and optimizing for several times.

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