基于农田不平度的拖拉机机组输入谱推导与振动仿真　Deduction of Input Spectrum of Tractor-implement Combination　and Vibration Simulation Base on Farm Surface Roughness

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关键词：　农田不平度 拖拉机作业机组 输入谱 振动 仿真

摘　要：　推导了拖拉机为两轴四轮、播种机为单轴两轮的六轮输入谱矩阵，可用于研究牵引式播种作业机组受农田不平度激励所产生振动的频域特性。用 Roberson-Wittenburg(R-W)方法建立了牵引机组的22自由度动力学模型，然后根据R-W法建立了机组的动力学普遍方程，在对方程进行运动学和动力学分析的基础上，采用多步Geal-预估-校正法进行了时域求解，采用等效的统计线性化方法进行频域求解，对比分析表明动力学模型正确。　The spectrum matrix of six-tire input, comprised of the two-axle and four-wheel of the tractor and the one-axle and two wheel of the seeder, were deduced. The obtained matrix can be applied to research the vibrating frequency domain characteristics of the seeder which is caused by the farm surface roughness. And by applying the R-W method, a dynamics model with 22 freedoms of the seeder was set up. Then the motion and dynamics was analyzed based on the derived dynamics equation. Furthermore, with the method of multiple-step Geal estimation and correction, the time domain was solved, and with the method of equivalent method of statistical linearization, the frequency domain was solved. Comparative analysis shows that the dynamics model is right.

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