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# 汽车电动座椅多向调节装置设计

## Design of Multi-direction Adjusting Device for Automobile Electric Seat

### 摘要

汽车是现今社会主流的交通工具，发展到如今的大众化，它自然就会备受人们的关注。在汽车繁多的部件中，汽车座椅是最受人们关注的。因为人们坐在上面的感受是非常重要的，所以汽车座椅的优劣势是汽车性能最直接的体现，也决定了人们对于汽车的第一感受。有些汽车的驾驶座椅和副驾座椅是电动的，很少有后排座椅是电动调节座椅。本次毕设设计的就是汽车电动后排座椅。

汽车电动座椅的电动调节操作具备方便快捷、安全且稳定等特点，这是保障人们行车时的安全性和舒适性的优良选择。电动座椅要跟上现代科技与生活的脚步，所以在满足便利性和舒适性两个要求外，现在汽车电动座椅的设计与创新仍在进行中，世界汽车大厂都在运用先进的技术，制造更加优越的电动座椅。

本毕设设计的电动座椅能实现六向调节，这些是上下、前后以及靠背角度倾斜移动。上下移动调节的传动方案是滚珠丝杆和支撑杆组成；

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前后移动的传动方案是齿轮齿条传动；座椅靠背倾斜调节的传动方案是减速齿轮组。均采用可逆直流电动机。

本毕设包含方案设计、关键零部件计算，以及三维仿真等。座椅由坐垫、靠背、靠枕、骨架、悬挂和调节机构等组成。

**关键词：**汽车座椅 电动座椅 滚珠丝杆 齿轮 齿条

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## Abstract

Automobiles are the mainstream means of transportation in today's society, and they will naturally attract people's attention as they become popular today. Among the many parts of the car, car seats are the most concerned. Because the feeling of people sitting on it is very important, the advantages and disadvantages of car seats are the most direct manifestation of car performance, which also determines people's first feelings about cars. The driver's seat and co-driver's seat of some cars are electrically powered, and few rear seats are electrically adjustable seats. The design of this design is the electric rear seat of the car

The electric adjustment operation of the car electric seat has the advantages of convenience, simplicity, safety and stability, which is the best choice to improve the safety and comfort of people when driving. Electric seats need to adapt to modern technology and life rhythm. In addition to meeting the two main requirements of convenience and comfort, the design and innovation of automotive electric seats are still in progress. Technology to manufacture more superior electric seats.

The electric seat designed in this design can realize the adjustment of six directions, which are up and down, front and back, and the angle of the backrest. The transmission scheme of up and down movement adjustment is composed of ball screw and support rod; the transmission scheme of forward and backward movement is rack and pinion transmission; the transmission scheme of seat back reclining adjustment is reduction gear set. Both use reversible DC motors.

This design includes scheme design, calculation of key components, and 3D simulation. The seat is composed of a cushion, a backrest, a pillow, a skeleton, a suspension and an adjustment mechanism.

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**Keywords:** car seat    Electric seat    Ball screw rod    gear    rack

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