Sample of Auburn University Projects Utilizing **MSC Adams**

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Auburn University fielded a senior design team working to compete in the 2016 AFRL University Design Challenge. The senior design team designed and constructed the TRIAD (Tactical Rope Insertion Assist Device) to assist soldiers in a rapid decent. During the design process, Adams was utilized to model the flexible rope and the TRIAD and simulate how the device would perform. The flexible rope was modelled using beam elements with material properties that replicated the behavior of the actual Nylon rope used in practice. An image of one of these simulations is provided in Figure 1. The weight of the person using the device is represented by the addition of the weight highlighted in green. Scripts were developed in the form of command files that would enable an Adams user to enter a variety of parameters for the rope for quick model building and further simulations. These simulations revealed some problems in the preliminary designs that were also seen in testing, and these problems were subsequently addressed for the final design and competition prototype.

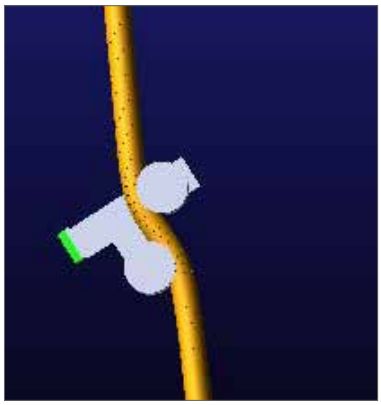

Figure 1

Auburn University worked in developing user written subroutines and an Adams plugin that would predict the wear rates of objects rattling inside of an enclosure. An example of this includes a projectile with attached shoe (Figure 2), that can slide out from the enclosure upon release. During transport the projectile could rattle causing wear of the enclosure. An experimental wear study was performed to determine wear coefficients, which were employed in an Adams simulation to determine contact forces, contact area, wear rate and total wear over time.

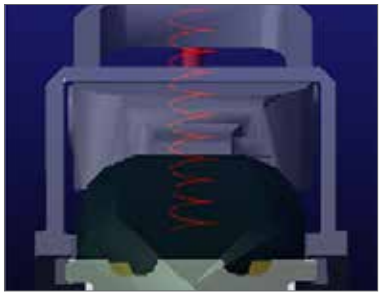

Figure 2

For more information on Adams and for additional Case Studies, please visit **www.mscsoftware.com/adams**

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