

MADYMO at MUARC

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ABSTRACT

The Monash University Accident Research Centre (MUARC) has been using MADYMO for a range of student projects and other applications since (1998). The modelling laboratory at MUARC initially commenced with a single computer running the MADYMO software on an O₂ UNIX machine. Gradual expansion over a number of years resulted in the current laboratory, which includes LS-DYNA, EASi-crash and PC-Crash running on Linux and Windows operating systems in addition to external access to Hypermesh and Abaqus. Currently, the modelling laboratory contains MADYMO Versions 5.4.1, 6.0.1, 6.1 and 6.2, but models are presently in the process of being converted to Version 6.2. Students and staff can access MADYMO through their own computer using a single licence which resides on a Linux machine. Often, a single project will involve the use of a combination of various software packages of which MADYMO is an integral part.

Previous and current projects which have used MADYMO include the following:

1. Near-side impacts (ARC funded project)
2. Whiplash in rear-end collisions (Astrid Linder; PhD dissertation);
3. Whiplash in side-impacts (Simone Lewis; PhD dissertation);
4. Injuries to 3-yo children in side impacts (Sujanie Peiris; PhD dissertation);
5. Pedestrian impacts (Anthony Clark and Clay Douglas; Holden funded research project);
6. Occupants in far-side impacts (Clay Douglas; PhD dissertation).

A brief outline of the current projects will be presented at the Users Meeting with a discussion of the MADYMO models that were used. In addition, in-depth presentations on some of the above projects will be given by the individual researchers who are involved.

A further application of MADYMO at MUARC was for the Catalyst TV Programme (ABC) through a half-hour special on head injuries. The programme included a reconstruction of a crash in which a young female sustained permanent brain injuries. In addition to scene inspections by the MUARC Crash Investigation Team, Simone Lewis and Melanie Franklyn performed MADYMO simulations in order to reconstruct the occupant kinematics of the crash. Some aspects of the Catalyst Programme will be presented at the Users Meeting.

Keywords

MADYMO, MUARC, Finite Element Analysis, LS-DYNA, Head Injuries.