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单层板超高速撞击弹道极限方程综合建模(PDF)

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Title: Integrated Modeling of Ballistic Limit Equations of Single Plate under Hypervelocity Impact

作者: [徐小刚](#); [贾光辉](#); [黄 海](#)
北京航空航天大学宇航学院, 北京 100191

Author(s): [XU Xiaogang](#); [JIA Guanghui](#); [HUANG Hai](#)
School of Astronautics, BUAA, Beijing 100191, China

关键词: [超高速撞击](#); [弹道极限方程](#); [单层板](#); [量纲分析](#)

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摘要: 提出综合建模方法进行单层板弹道极限方程建模。采用量纲分析方法得到具有待定指数和系数的单层板弹道极限方程一般形式,采用单变量法设计仿真工况,通过LS-DYNA仿真软件计算得到单层板结构的弹道极限,针对仿真结果采用线性回归方法确定弹道极限方程的待定参数,获得单层板弹道极限方程。与试验结果的对比表明,综合建模方法得到的弹道极限方程具有更高的精度,适用于更加广泛的航天器防护结构。

Abstract: It was advised to build the ballistic limit equations of single plate with integrated modeling method. The general expression of ballistic limit equations was set up with dimension analysis, and the ballistic limit was simulated with LS-DYNA, the parameters in the general expression were established with linear regression method. Compared with experiment result, the equations achieved in the paper are more precise, they can be used on more aircraft protection structures.

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备注/Memo: 收稿日期:2008-12-01 作者简介:徐小刚 (1981-), 男, 山东莱阳人, 博士研究生, 研究方向:超高速撞击, 结构动力学。

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