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基于明胶实验的弹创空腔序列图像处理技术(PDF)

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Title: The Processing Technique of Sequential Ballistic Wound Cavity Images Based on Gelatin Experiments

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关键词: [瞬时空腔](#); [空腔膨胀](#); [边缘检测](#); [轮廓提取](#); [曲线滤波](#)

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摘要: 用瞬时空腔最大膨胀波及范围评价枪弹致伤效应,关键是获取该膨胀范围的准确轮廓,并计算对应的空腔容积。用基于Canny算子的空腔轮廓提取算法得到单帧图像的瞬时空腔轮廓,对序列空腔轮廓图进行“或”运算叠加,对叠加结果进行轮廓提取,用基于斜率的滤波方法去除噪声点,最终可得到空腔最大膨胀范围轮廓。结果表明,该方法可以有效获得准确的瞬时空腔的最大膨胀范围,为定量分析枪弹的致伤效果提供可靠的评价参考。

Abstract: To evaluate the bullet injury effects with the biggest expansion region of the temporary cavity, the key points were proposed to obtain the accurate contour of the cavity and calculate the corresponding volume. The cavity contour extraction algorithm based on canny operator was used to obtain the contour of the temporary cavity in the single frame image. The sequential cavity contours were superposed with OR operation to extract the contour of the superposition. Finally, the biggest expansion region contour of cavity was obtained by removing noise spots with the filter method based on slope. The experimental results show that with the proposed method, the biggest expansion region of the temporary cavity could be efficiently obtained. This method offers a reliable evaluation reference for the quantitative analysis of bullet injury effects.

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