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基于超声图像的生物组织细微热损伤检测算法

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摘　要：

基于超声的组织损伤无损检测在HIFU临床的推广与应用中具有重要意义。本文提出一种基于相关距离的快速算法，通过对辐照前后HIFU焦域位置超声图像进行二维亚像素级互相关分析，追踪超声图像的中特征点的位移及变化，从而对HIFU焦域位置生物组织的细微热损伤进行检测。结果表明，超声图像亚像素级相关分析矢量场可反映组织发生凝固性坏死的位置，其相关距离可以辅助探测组织束损伤程度。

关键词：图像变化探测；无损检测；亚像素；组织热损伤

Ultrasound image based method for tiny tssue thermal lesion detection

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Abstract:

Ultrasound based tissue thermal lesion non-invasive detection has an important significance in HIFU clinic application. We proposed a fast correlation-distance based method, which analyses the sub-pixel level cross-correlation of ROI(region of interest) of ultrasound images before and after HIFU exposure. Detection of tiny thermal lesion of tissue is performed by tracing the movement and change of featured points on ultrasound images. The results showed that sub-pixel cross-correlation vector field can reflect the ablation lesions position and correlation distance is helpful for detecting the degree of the beam ablation lesions.

Keywords: image change detection ,non-invasive detection; sub-pixel; tissue thermal lesion

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