用震源扫描算法（SSA）研究列车源的运动

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摘要   用震源扫描算法（Source-Scanning Algorithm,SSA）对2004年5月山东兖州试验时地震仪记录到的列车产生的一次振动波形进行研究.结果表明，在3个短暂时间段内，我们可以清楚地看到列车运动所产生的鸟巢形波形的精细结构.通过分段分离的方法，我们得到了3张有关震源分布的图像，图像显示列车正在由NW往SE行走穿过本区.扫描结果表明，列车震源经过适当预处理可以当作许多分散的小震源来分别处理，也显示了SSA方法处理象列车这种无法识别震相的数据波形具有的潜力.

关键词   震源扫描算法(SSA)   "亮度"函数   列车震源   鸟巢形结构

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Research on the movement of vibration source of train by means of SSA

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Abstract In this paper, we study the train-induced vibration recorded by seismographs during our experiment in May 2004 in Yanzhou, Shandong Province by means of Source-Scanning Algorithm (SSA). The result shows that there are 3 clear nest-shaped fine structures made by the movement of train in three very short time periods. We get three vibration source images by piecewise separation. The images show that the train is heading forward from NW to SE when passing through this district. The example convinces us that the source of train can be dealt with as a lot of separate little vibration sources by means of some suitable pretreatment. It also shows the potentials of SSA in dealing with the data lacking seismic phases like this.

Key words Source-Scanning Algorithm (SSA); Brightness function; Train vibration source; Nest-shaped structure

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