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## Visualization of 4-component borehole strainmeter data in China

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With the accumulation of 4-component borehole strainmeter data and the improvement of observation reliability, it is a primary of current research to improve the efficiency of processing, analyzing and visualizing of these data. The visualization of borehole strain observation data is a key means to convey the information behind the data, display the data research results and extract the shallow surface stress state revealed by borehole strain.

Borehole strainmeter data are of great significance for earthquake prediction research due to its' high resolution in short-medium term time scale of earthquake prediction. With the progress of observation technology, many four-component borehole strain gauges in China had experienced the data stabilization period, the early years of establishing the instrument, and the borehole strain station began to obtain a batch of high-quality observation data.

By using the normal stress petal diagram to show the change of the ground stress, it can not only qualitatively analyze the change of the relative ground stress of the station, but also quantitatively read the observed normal stress in any direction at a certain time. In this paper, the method of normal stress petals diagram is combined with map visualization technology to process and analyze the strain observation data of four-component borehole across the country. The main works are as follows: first of all, The construction of the stress petal visualization platform can display the dynamic stress effectively in all directions of 30 stations across the country; secondly, Variable sliding window length and sliding spacing added according to specific needs can not only directly display the change of the stress petal over the years, but also show the stress petal map of the solid tide strain all over the country; thirdly, The platform can display the co-seismic stress petal variation image observed at the national borehole strain stations and visually show the stress changes observed by the local borehole strain gauge during the seismic wave propagation. Finally, The borehole strainmeter data can monitor the relative geostress state of the fault near the borehole. Then the magnitude and direction of the maximum principal stress at the borehole strain station reflected by the stress petal can further calculate the corresponding changes of dynamic coulomb stress and static coulomb stress which can help to analyze seismic dynamic triggering problems.

