

## **Directional consistence method for determining actual nodal planes**

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### **Abstract**

We propose a method to determine the actual nodal plane between the two solutions of a focal mechanism. Based on the consistency of the fault direction and spatial distribution of earthquake hypocenters, we design an algorithm to determine the most likely perpendicular direction to the fault plane of each earthquake. We apply this algorithm to the F-net catalog of centroid moment tensor focal mechanism solutions for Japan, with the actual fault plane determined based on the hypocenter locations of small earthquakes in the JMA catalog. The stability of this algorithm is investigated by comparison among different settings of parameters.

### **References:**

[1] Kagan Yan Y. (2014). Earthquakes, Wiley, West Sussex, UK.

[2] Gutenberg, B. and Richter, C. F. (1954). Seismicity of the Earth, 2nd ed., Princeton University, Princeton, New Jersey.