

STT055-05

会場:302

時間:5月27日 09:30-09:45

## 極限環境における観測をめざしたレーザー干渉式広帯域地震計の性能評価 Performance evaluation of a laser-interferometric broadband seismometer for observations in extreme environments

堀 輝人<sup>1\*</sup>, 新谷 昌人<sup>1</sup>, 鹿熊 英昭<sup>2</sup>, 小林 直樹<sup>3</sup>, 白石 浩章<sup>3</sup>, 岡田 達明<sup>3</sup>, 佐藤 毅彦<sup>3</sup>, 村上 英記<sup>4</sup>  
Teruhito Hori<sup>1\*</sup>, Akito Araya<sup>1</sup>, Hideaki Kakuma<sup>2</sup>, Naoki Kobayashi<sup>3</sup>, Hiroaki Shiraishi<sup>3</sup>, Tatsuaki Okada<sup>3</sup>, Takehiko Satoh<sup>3</sup>,  
Hideki Murakami<sup>4</sup>

<sup>1</sup> 東大地震研, <sup>2</sup> 地震予知振興会, <sup>3</sup> 宇宙研, <sup>4</sup> 高知大

<sup>1</sup>ERI, <sup>2</sup>ADEP, <sup>3</sup>JAXA, <sup>4</sup>Kochi

We have developed a Laser-interferometric broadband seismometer for observations in extreme environments.

As such environments, the seafloor (ocean bottom borehole) and the planet (Mars investigation etc.) are so important sites from the viewpoint of seismology.

The seismic observation in ocean bottom boreholes in subduction zones is a critical way to get better comprehension of earthquake generation process and the prediction.

Also, the seismic observation on a planet (earthquakes, free oscillation) is so effective way to reveal its internal structure.

To perform valuable observations for such purpose, many superior specifications are simultaneously required for the seismometer, such as high sensitivity, broadband, maintenance-free, robustness, low noise, compact size (borehole/hand size), durability in high/low temperature, and radiation durability (cosmic ray).

As there are no seismometers on the market that have these specs, we have originally developed a laser-interferometric type broadband seismometer.

This seismometer consists of 3 sections: a laser interferometer, a long-term pendulum, and a feedback servo electronics.

Having passed through the vibration test and the temperature test, we have made the breadboard model of this seismometer.

In this presentation, we will mainly show the details of the self-noise test and the evaluation through the test observation at Nokogiriyama observatory.

キーワード: 地震計, 広帯域, ボアホール, 惑星探査, 海底, レーザー

Keywords: seismometer, broadband, borehole, planet, ocean, laser