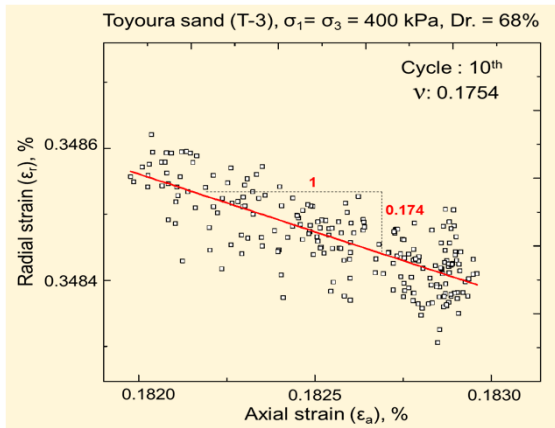
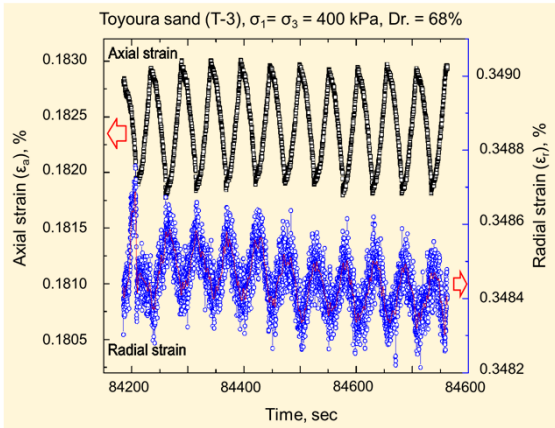


Poisson's ratio is defined as the ratio of radial strain to axial strain. Axial and radial strains were precisely monitored using LDTs and clip gauges during small cyclic loadings and the strain increments in each cycle were evaluated statically. Disk Transducer method is able to evaluate both compressional and shear wave velocities in an identical specimen. With the obtained wave velocities, the Poisson's ratios were computed dynamically. This study is intended to evaluate the Poisson's ratios of the fine granular materials, Toyoura sand and Silica sand.

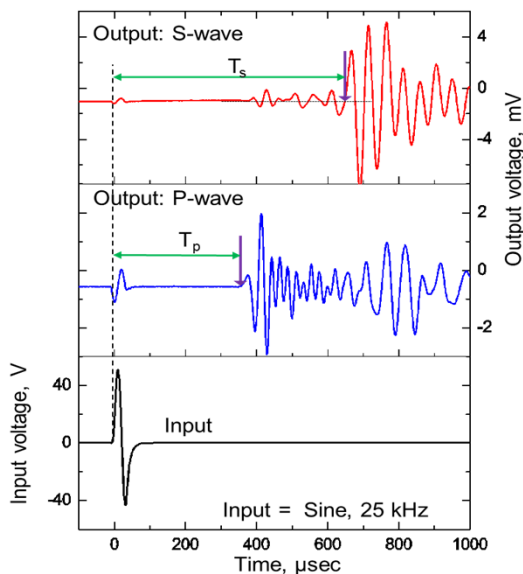
Static method



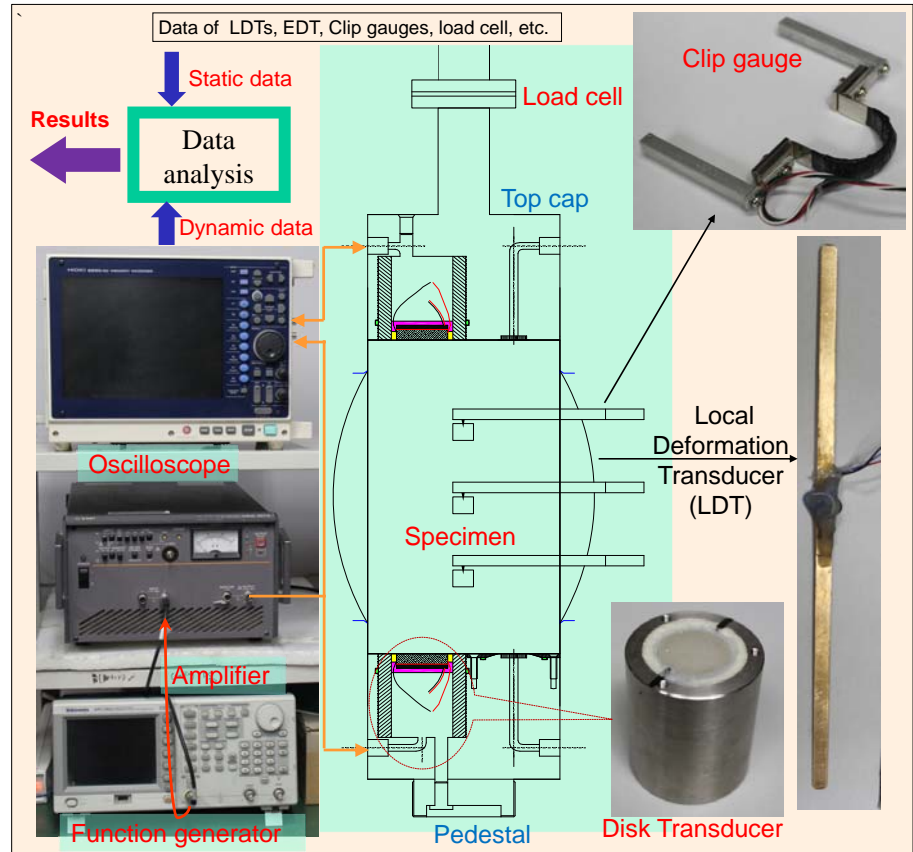
Poisson's ratio evaluation in each cycle

Dynamic method

Silica sand(S-1), Dry, Dr. = 88%, $\sigma_1 = \sigma_3 = 50$ kPa



Experimental set up

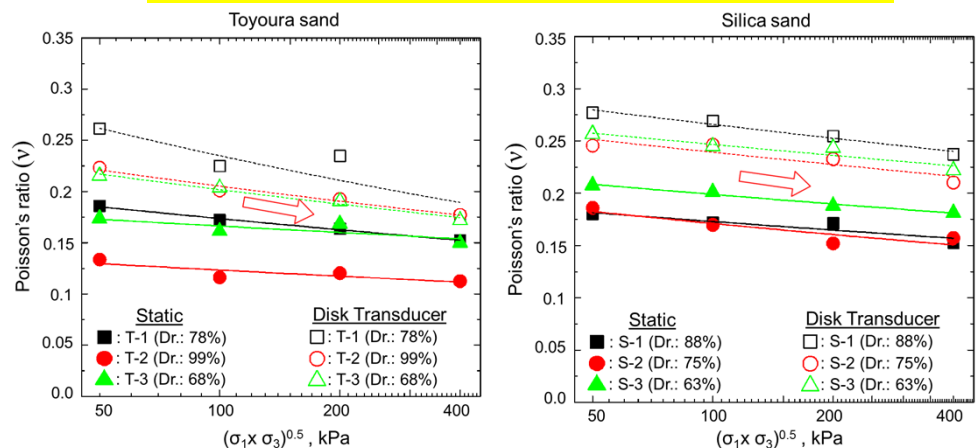


Poisson's ratio

$$\text{Statically, } \nu = -\frac{\delta \varepsilon_r}{\delta \varepsilon_a} \text{ where, } \varepsilon_a = -\int_{H_0}^H \frac{dH}{H} = -\ln\left(\frac{H}{H_0}\right) \text{ \& } \varepsilon_r = -\int_{R_0}^R \frac{dR}{R} = -\ln\left(\frac{R}{R_0}\right)$$

$$\text{Dynamically, } \nu = \frac{(0.5V_p^2 - V_s^2)}{V_p^2 - V_s^2} \text{ where, } V_p = \frac{h}{T_p} \text{ \& } V_s = \frac{h}{T_s}$$

Statically and dynamically evaluated Poisson's ratios



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