# Local and Global Behaviour of Axial Cyclic Loaded Instrumented Model Displacement Piles In Sand

**Author(s)**
Siya Rimoy, Richard Jardine, Cristina Tsuha, Zhongxuan Yang

**Abstract**
This paper describes the first phase of an extensive campaign of axial cyclic loading tests performed on intensively instrumented displacement piles installed in large pressurised calibration chamber. The chamber was filled with medium dense silica sand that combined measurements of the effective stress paths developed along the pile shaft and within the sand mass at different distances from the shaft. The paper also outlines the evolution of the local interface effective stress paths during cyclic loading. Three different styles of cyclic response – stable, metastable and unstable – are identified and linked to the global degree of cyclic stability. Increases or decreases in shaft capacity induced by cycling can be related to the cyclic loading parameters and to the local mechanical behaviour of the pile-sand interface and the sand mass. The second phase of testing, which involves many more cyclic experiments, is currently underway.