**Measurement of Crack Width of Brittle Materials by Moiré Method**

Keywords: Brittle Materials, Concrete, Crack, Measurement of crack width, Moiré method

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**Background**
- Structural parts must be done the periodic inspection every 5 years in Japan.
- It is very difficult to detect the cracks by visual inspection when the objects are far from the inspector.

**Aim**
- Development of a measurement method of the crack width of brittle materials by Moiré method.
- Monitoring of the crack growth in the brittle materials.
- Detection of the crack initiation in the brittle materials.

Moiré fringe can be observed when two grids are overlapping each other. If two grids with same spacing and different angle are overlapped, Moiré fringe by mis-alignment can be observed. If the spacing of the grid changed by cracking, the offset of the Moiré fringe can be seen.

\[
W(\text{Crack width}) = a \frac{\Delta d}{d} \tag{1}
\]

- \(a\): spacing of the grid,
- \(d\): spacing of the Moiré fringe,
- \(\Delta d\): offset of the Moiré fringe,
- \(W\): crack width.

**Advanced Research Topics**

Offsets of the Moiré fringe. Crack width can be calculated to 0.5mm.

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**Publications**

**Applied area and future prospects**
- Detection of the crack in the concrete structures
- Monitoring of the crack initiation after repairing.
- Detection of the crack initiation and growth, under the painting layer.

**Issues for technology transfer**
- Increasing of durability of the model grid.
- Development of the system for monitoring of the crack initiation and growth.