

# Digital Speckle Pattern Interferometry (DSPI) for condition survey of panel paintings in the National Museum in Krakow, Poland

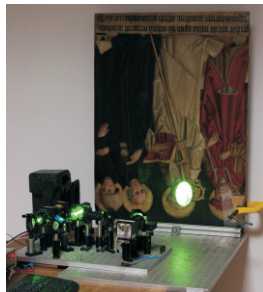
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## Object

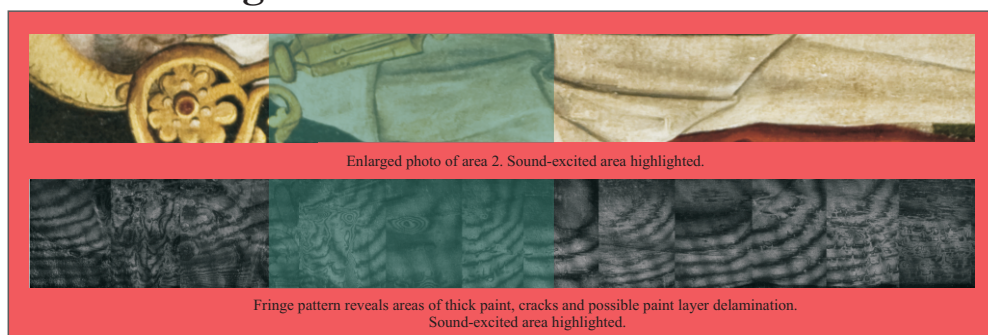
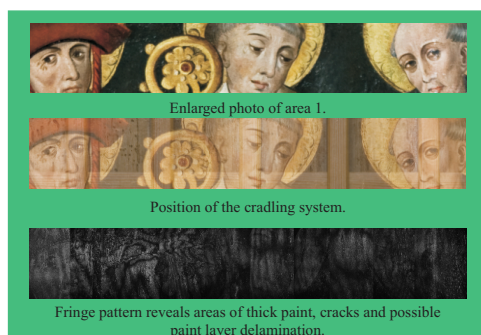
*Saint Bonaventure, Bernard of Clairvaux, Benedict of Nursia and Augustine, around 1500, distemper on wood.*



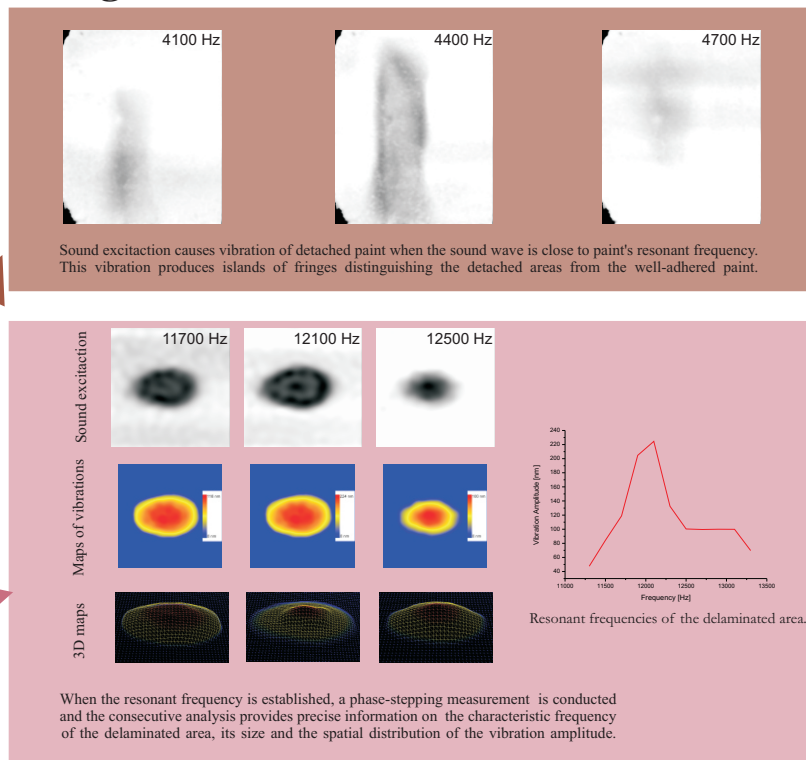
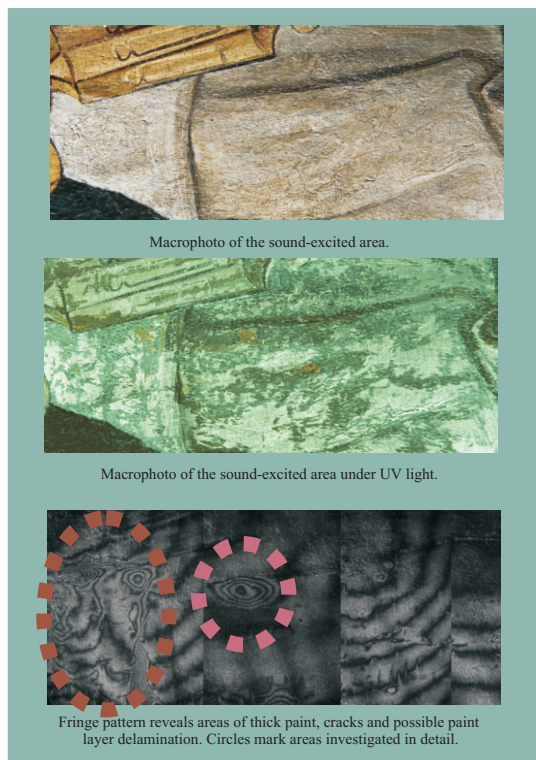
## The DSPI method

Digital speckle pattern interferometry (DSPI) is a sensitive imaging technique that responds to changes of surface topography caused for example by pressure or temperature changes. Hidden defects are revealed by the inhomogeneity of such deformation fields. The DSPI method was found to trace precisely cracks and delamination of paint layers.

## Monitored areas using thermal excitation



## Monitored areas using sound excitation



## Conclusions

- DSPI can greatly contribute to monitoring planar features of the paint layer. By recording anomalous fringe clusters, a map of surface irregularities is produced and guides a subsequent traditional conservation survey using visual inspection, or further microscopic or analytical techniques.
- DSPI may reveal paint detachments at an incipient stage, which cannot be easily detected by a visual or manual inspection.
- The speckle techniques are precise and repeatable enough to follow the defect development between subsequent condition surveys.
- The technique can be an attractive tool for conservation practitioners.