Improvement of the near field resolution of ultrasound probes

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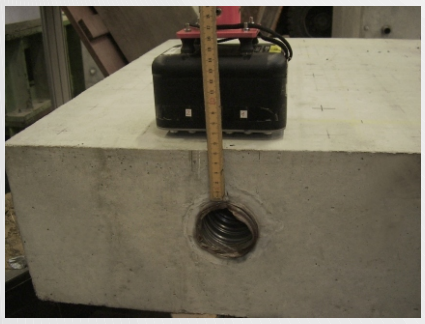
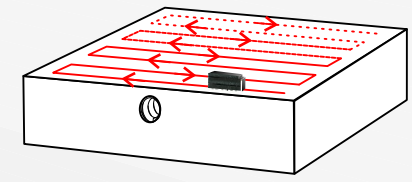
VIII.2 Non-destructive Damage Assessment and Environmental Measurement Methods



TR probe M2502 on the test specimen

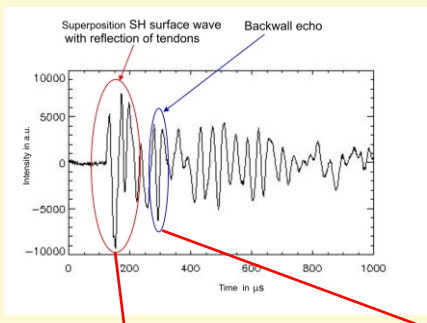
Problem

- **The near-field resolution of ultrasound probes is limited by a ,,dead zone''.The usable time range in the echo signal can be limited by capaciti-ve coupling of the transmitted signal to the input amplifier.This can hap-pen also by applying of SE-probes.The problem is the superposition of the transmitted signal with the received signal of the near-surface areas. SH surfacewave which are emitted directly by the transmitter at the surface of the specimen are picked up by the receiver, too.**



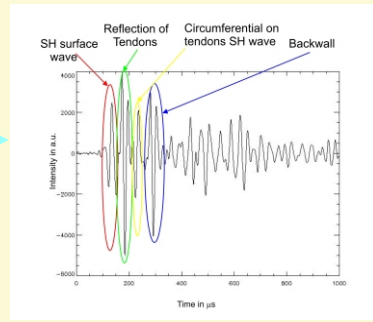
Measuring principle:
2D data capturing with probe M2502 recording Fa Acsys Moskow.

Filtering of SH surface wave

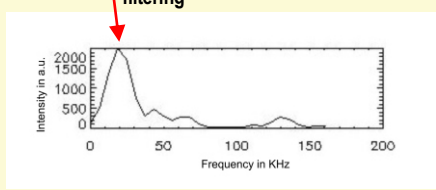


Typical curve without SH surface wave filtering

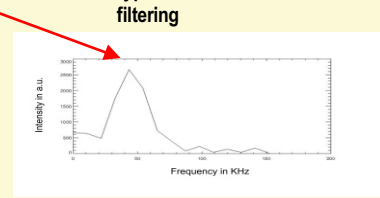
Digital filtering



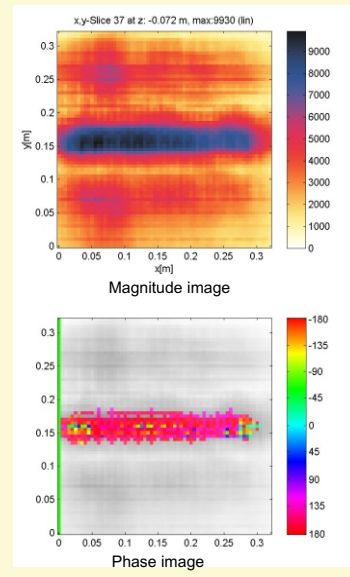
Typical curve with SH surface filtering



SH surface wave spectrum

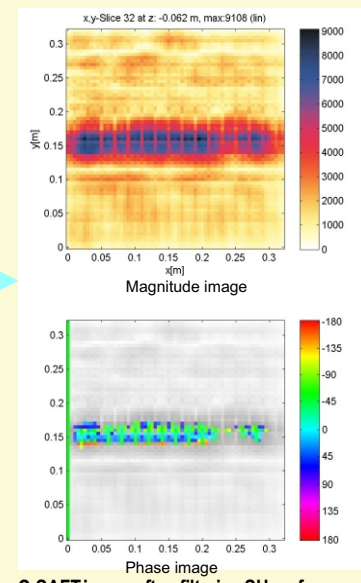


Backwall echo spectrum



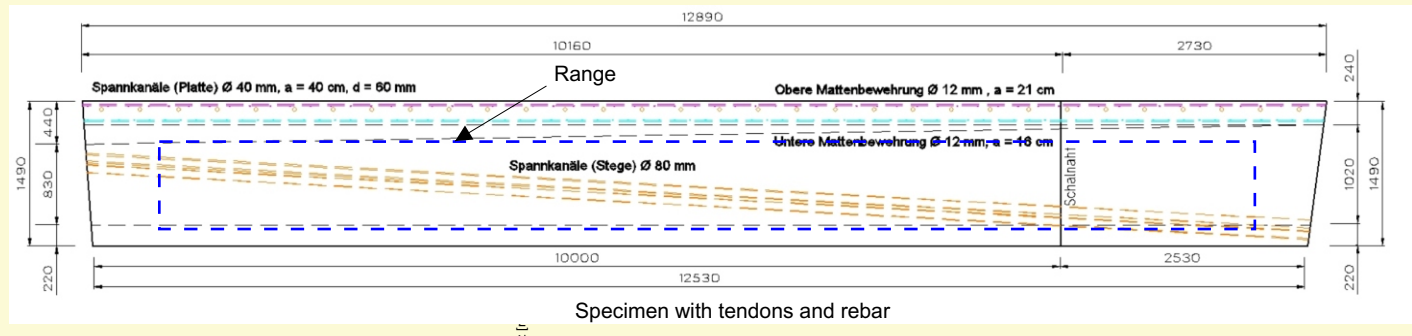
C-SAFT image without filtering of SH surface waves. False colour representation of phase value, because there isn´t a phase displacement at the interface between the concrete and the air filled tendon duct.

Digital filtering



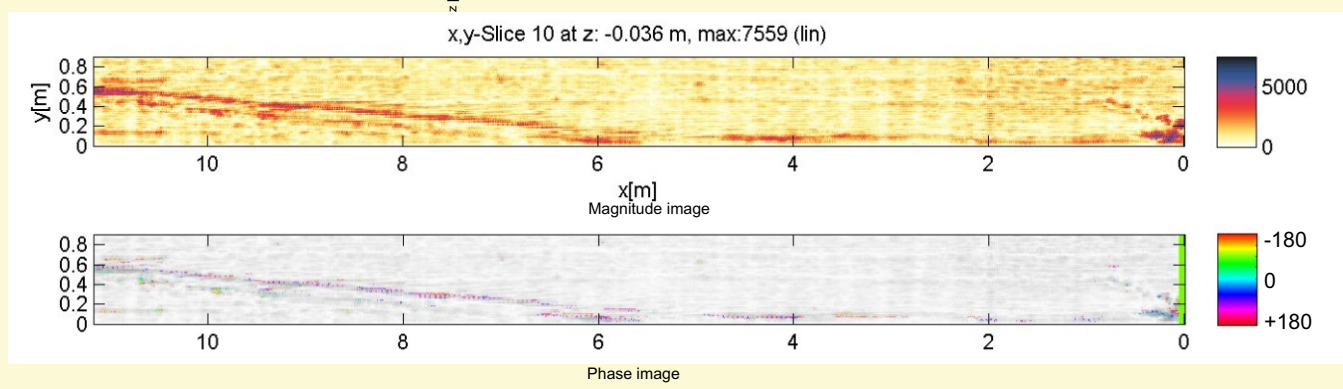
C-SAFT image after filtering SH surface waves. Proper representation of the phase value

Measuring result obtained at specimen from post-tensioned concrete bridge

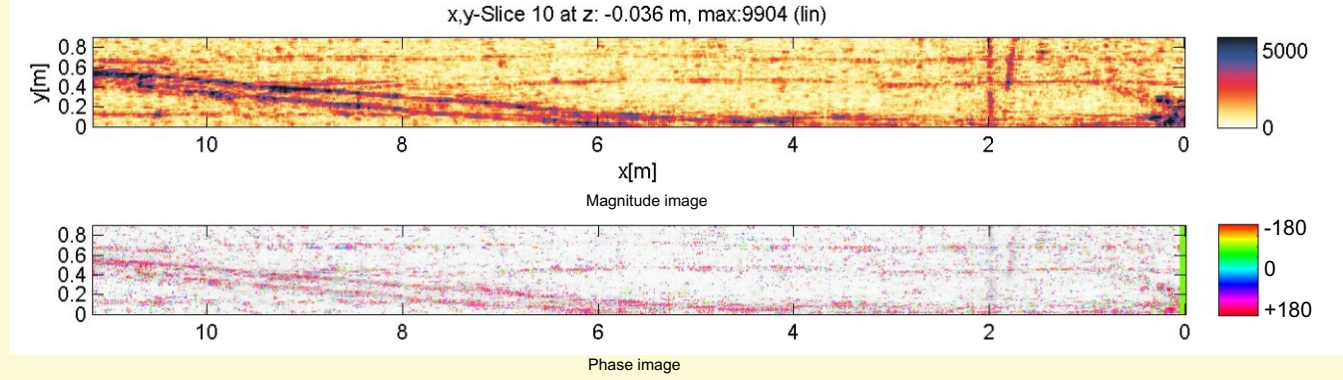


Specimen with tendons and rebar

Secsion of a box girder bridge



C-SAFT image without filtering of SH surface waves



C-SAFT image filtering of SH surface waves. Proper representation of the phase value

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