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Bristol Composites Institute

Investigating size effects on acoustic emission in composite sheets

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UKRI Engineering and Physical Sciences Research Council

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Investigating size effects on acoustic emission in composite sheets

Final Goal: Develop mathematical model & ML algorithm that decouple damage signals from geometric artifacts

Gaps in Existing Research

- Lack of detailed studies on scaling impact
- No established correction methods for size distortions

Signal behaviour changes with specimen size, **impacting damage detection accuracy**

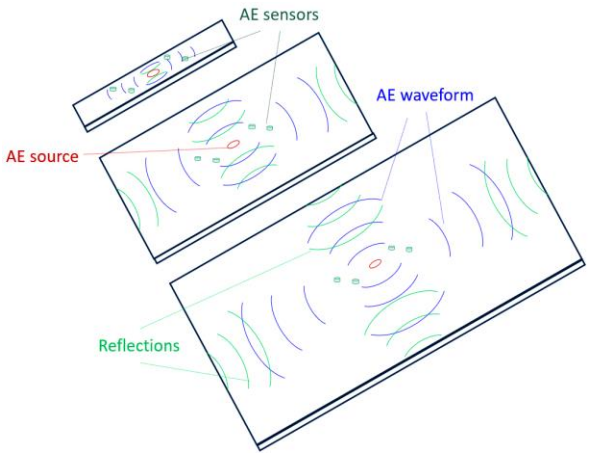

Illustration of wave and reflection variability with size

Geometric scaling effects

Boundary reflections

Mode conversions

Systematic testing of plates of different sizes

Develop mathematical corrections for geometry distortions

Integrate corrections into ML algorithm

Size-invariant damage classification

FEA of plate cross-section – wave displacement and reflection visualisation

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