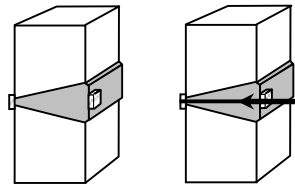




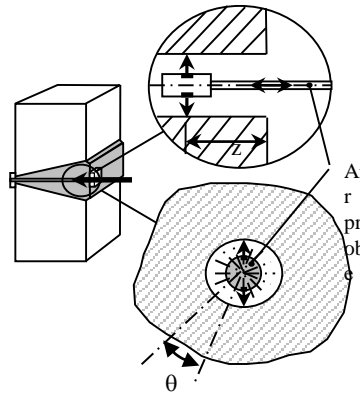
# NeT – 20 Years of DHD measurements

# Deep-hole drilling measurement technique

1 Attach front bush as a reference

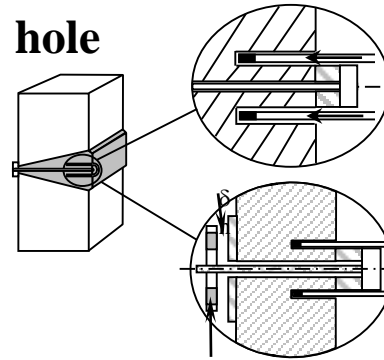


2 Gun drill reference hole



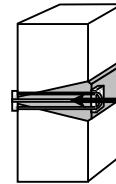
3 Measure reference hole diameter

4 Trepan core around reference hole using EDM and measure core length change,  $\delta h$



Capacitance transducer

5 Re-measure reference hole diameter

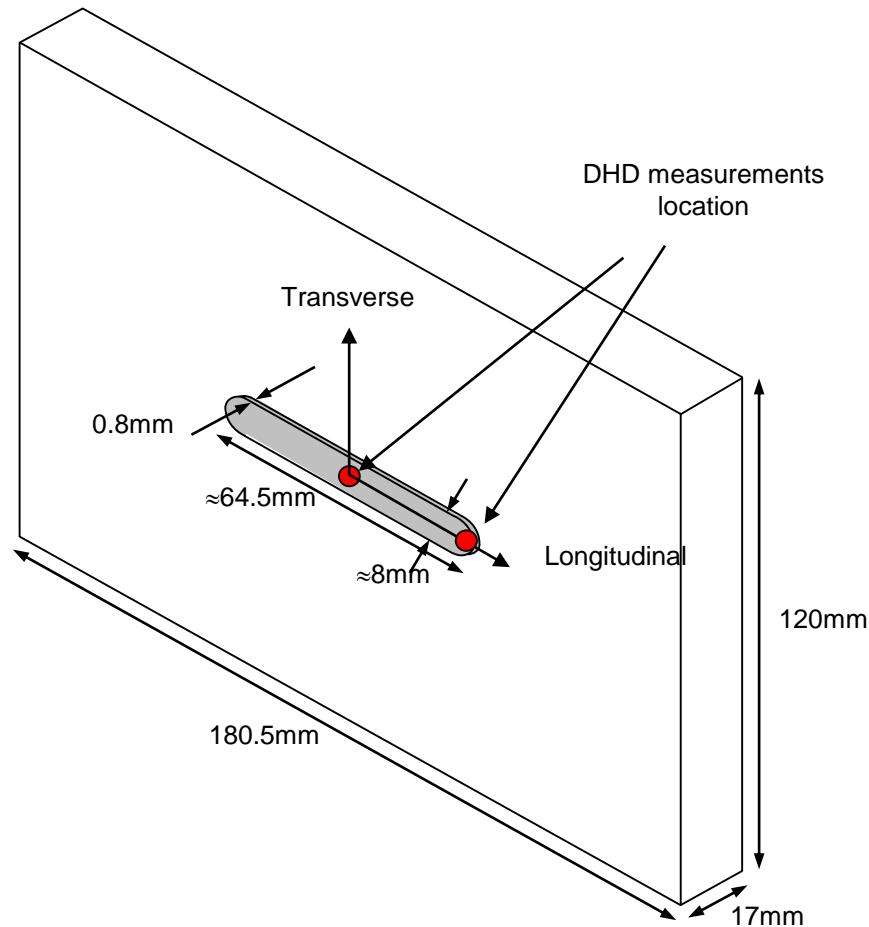


# 🔥 NET Bead on Plate Specimen TG1



- Specimen A2.1
- 1.5mm diameter reference hole and 5mm diameter core used
- Measurements made at 18 angular positions and every 0.2mm depth

# 🔥 NET Bead on Plate Specimen TG1



- Diametral distortions measured to  $\pm 0.5\mu\text{m}$
- The in-plane residual stresses,  $\sigma_{\text{transverse}}$  and  $\sigma_{\text{longitudinal}}$  are determined
- Central DHD measurement at 90mm from edge of specimen
- Stop end DHD measurement at 120.8mm from edge of specimen
- CMM data available for A21

# 🔥 NET Bead on Plate Specimen TG1

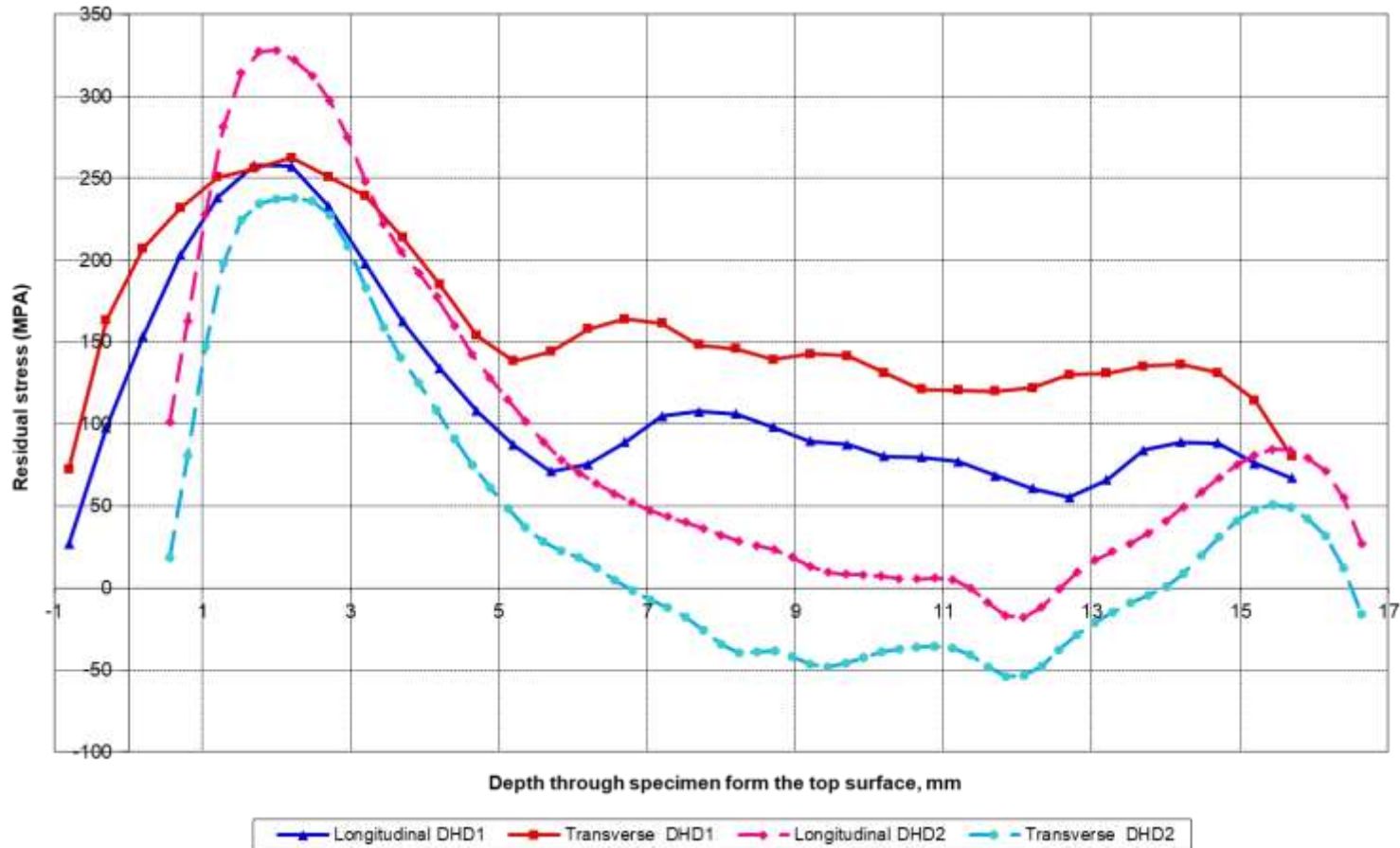


## Remarks

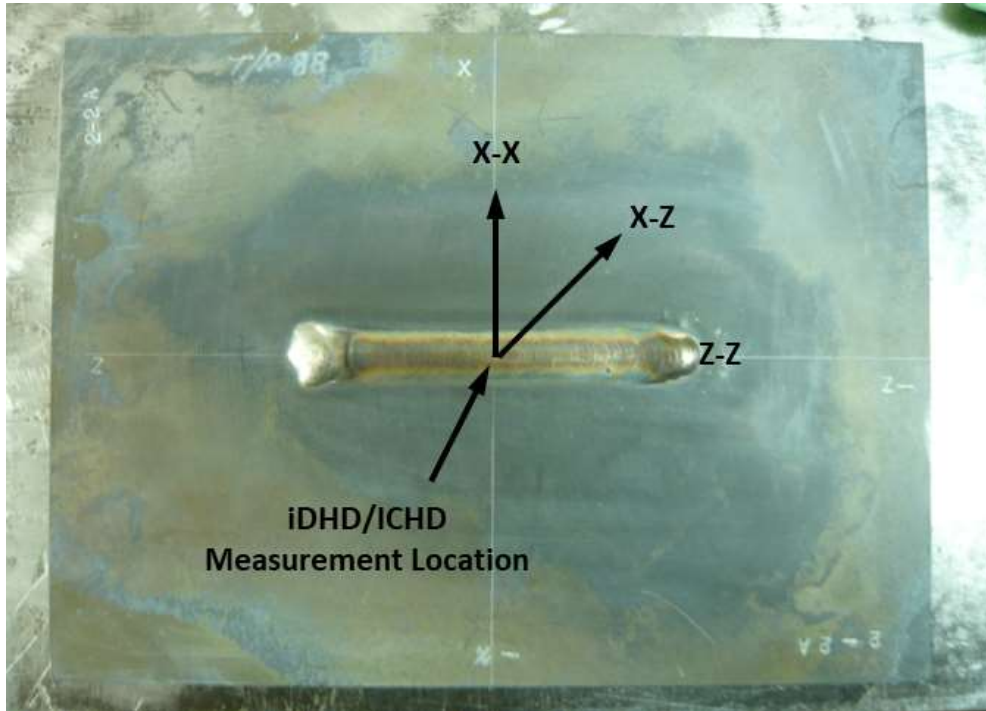
- Core can be used for  $d_0$  measurements in neutron studies
- Core to be sectioned to reveal details of weld fusion boundary



# 🔥 NET Bead on Plate Specimen TG1

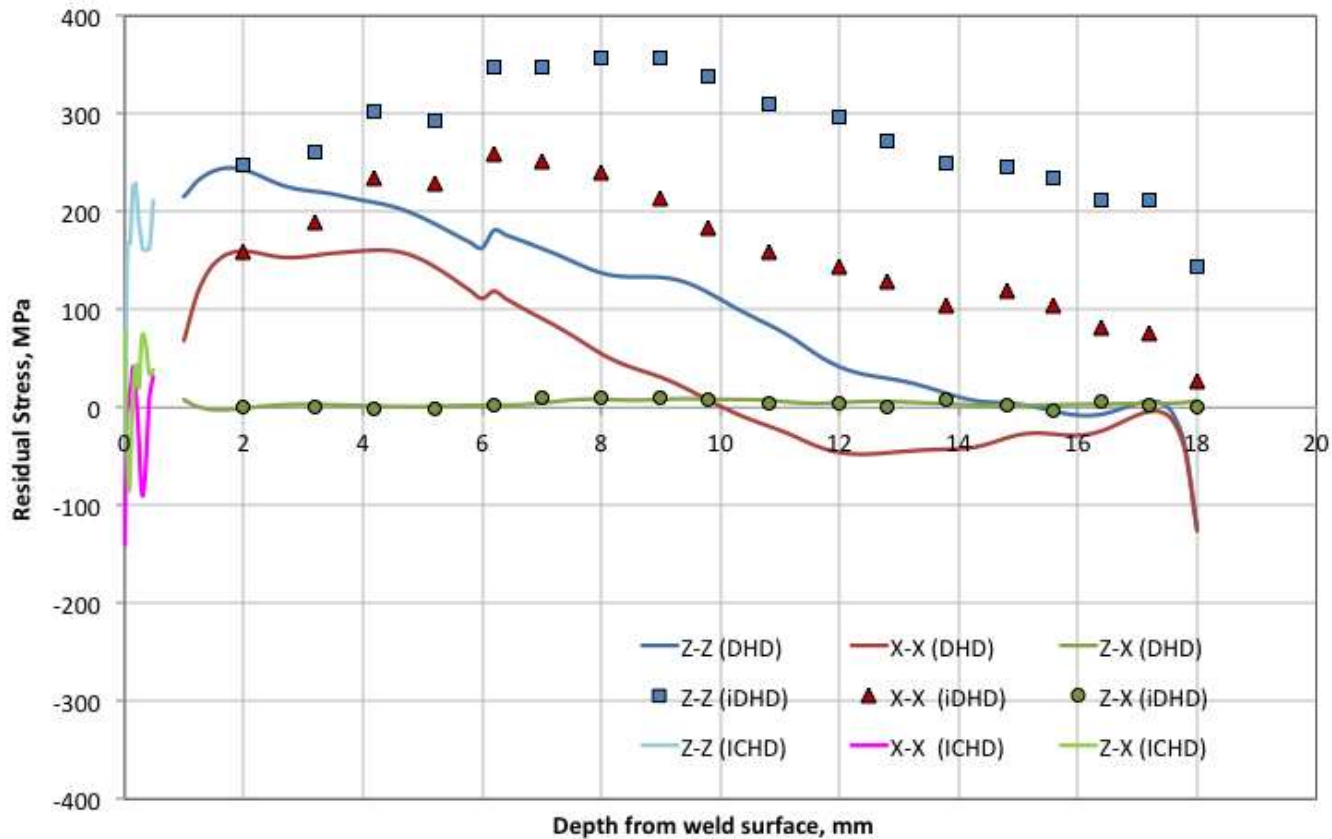


# 🔥 NET Specimen TG4



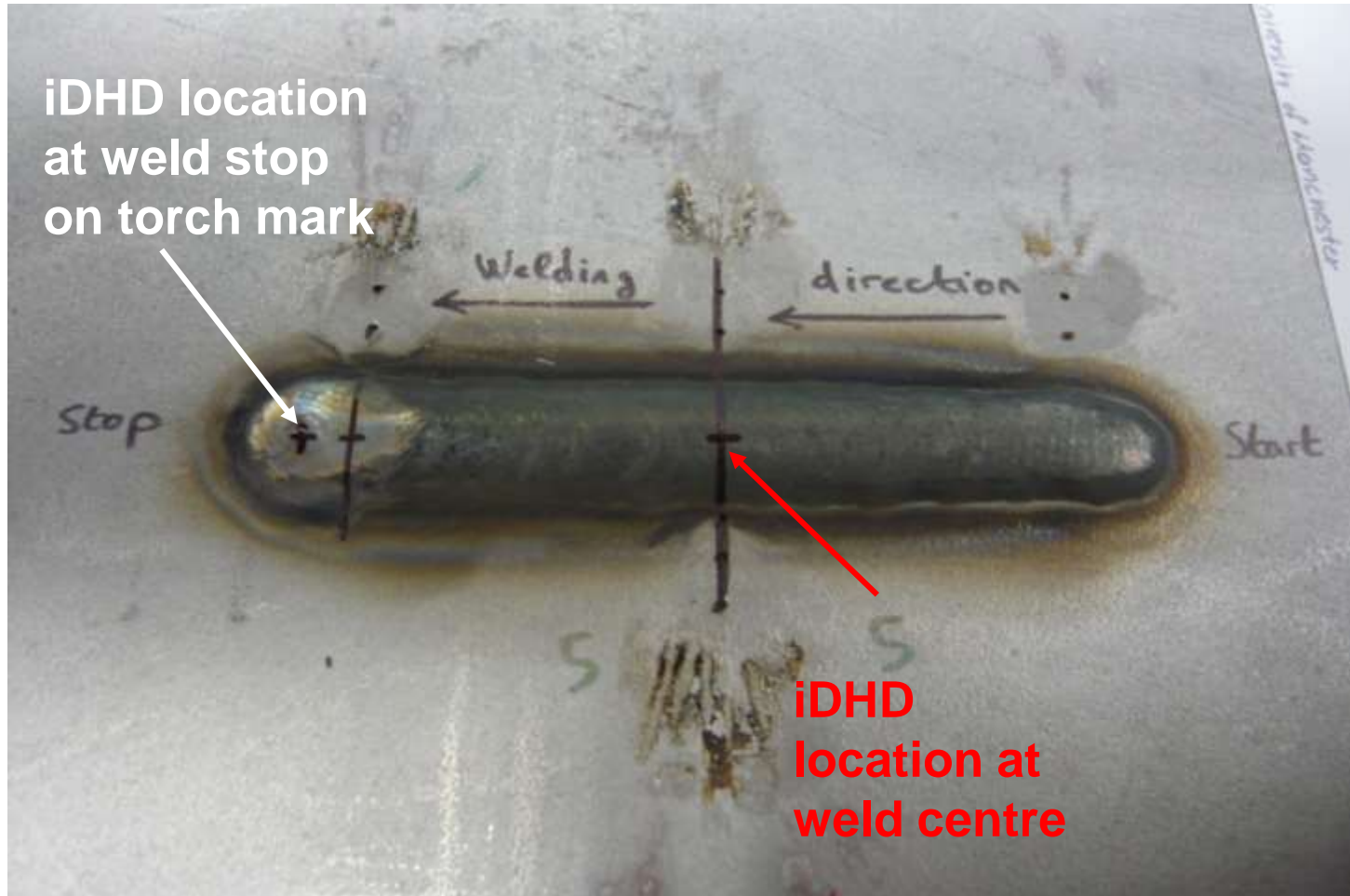
- Three-pass slot weld specimen in austenitic stainless steel

# 🔥 NET Specimen TG4





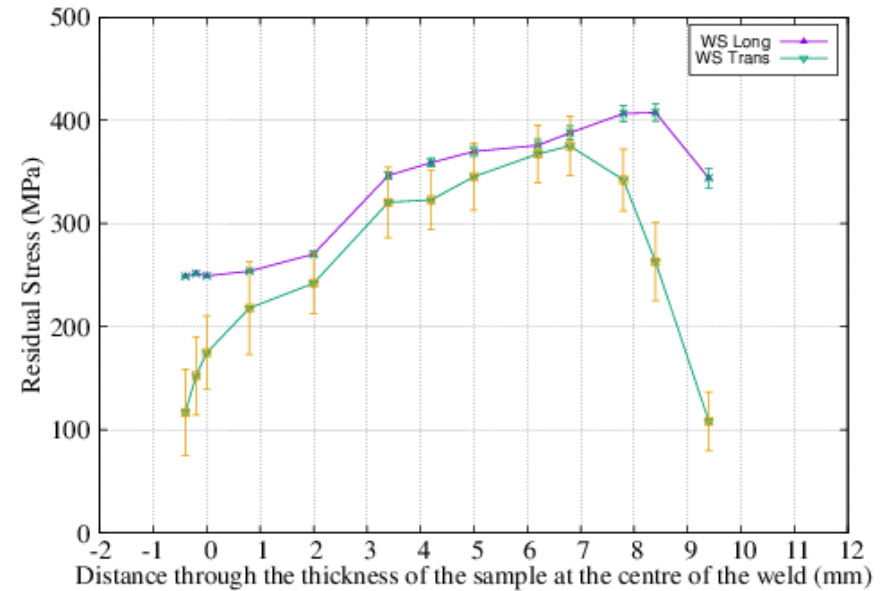
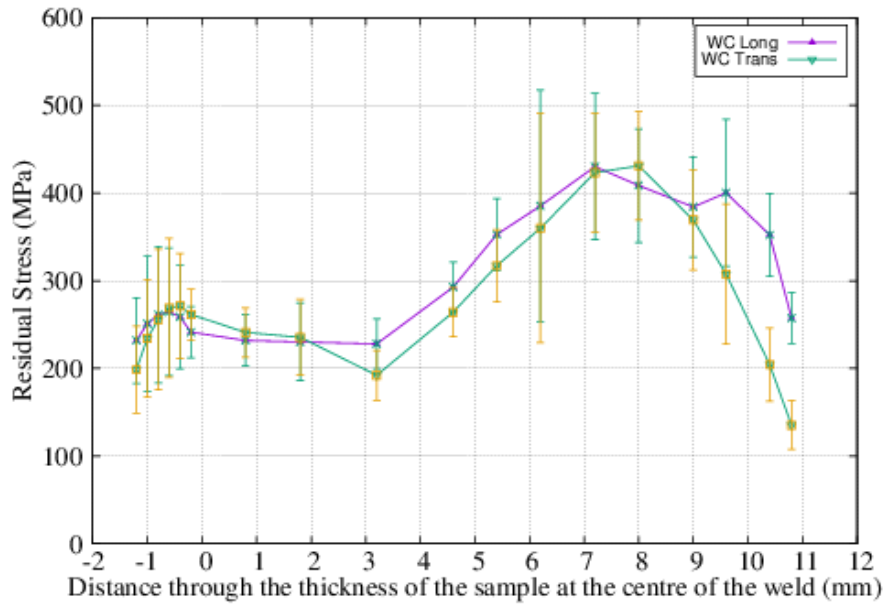
# NeT TG6



# NeT TG6

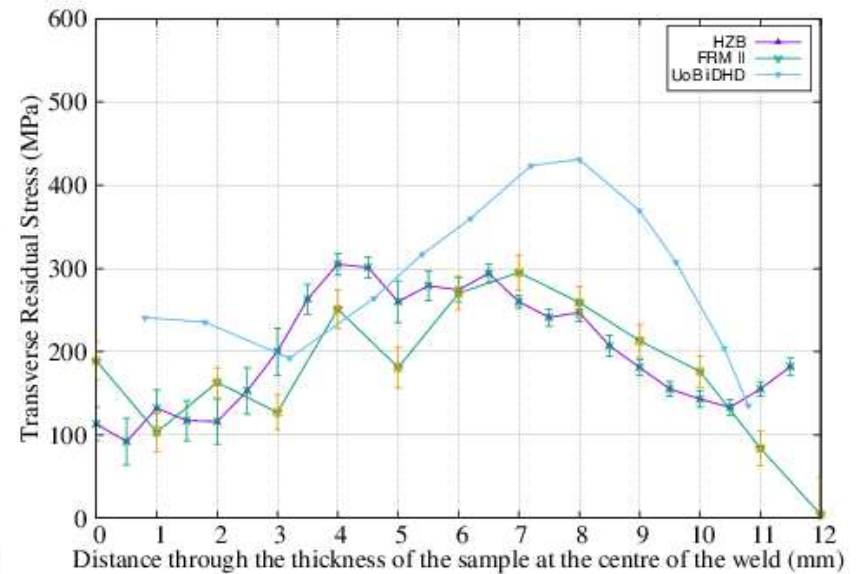
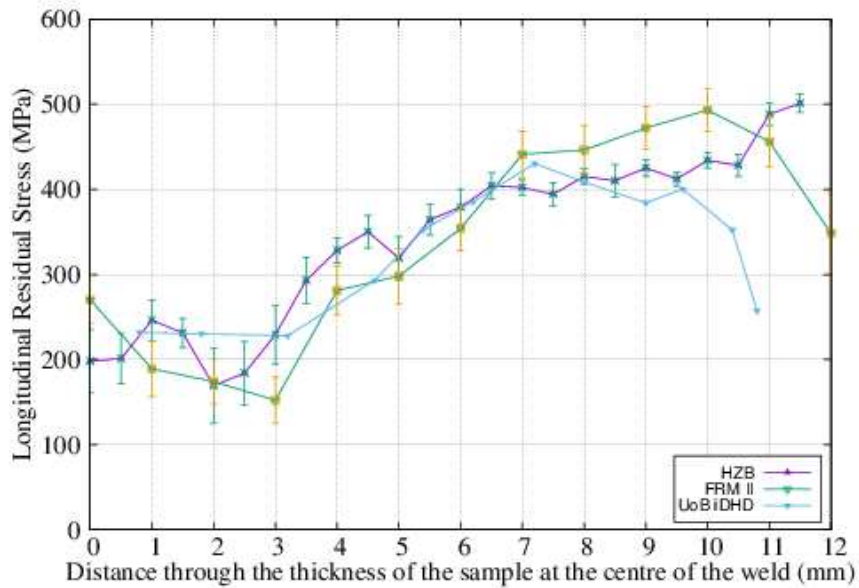


# NeT TG6



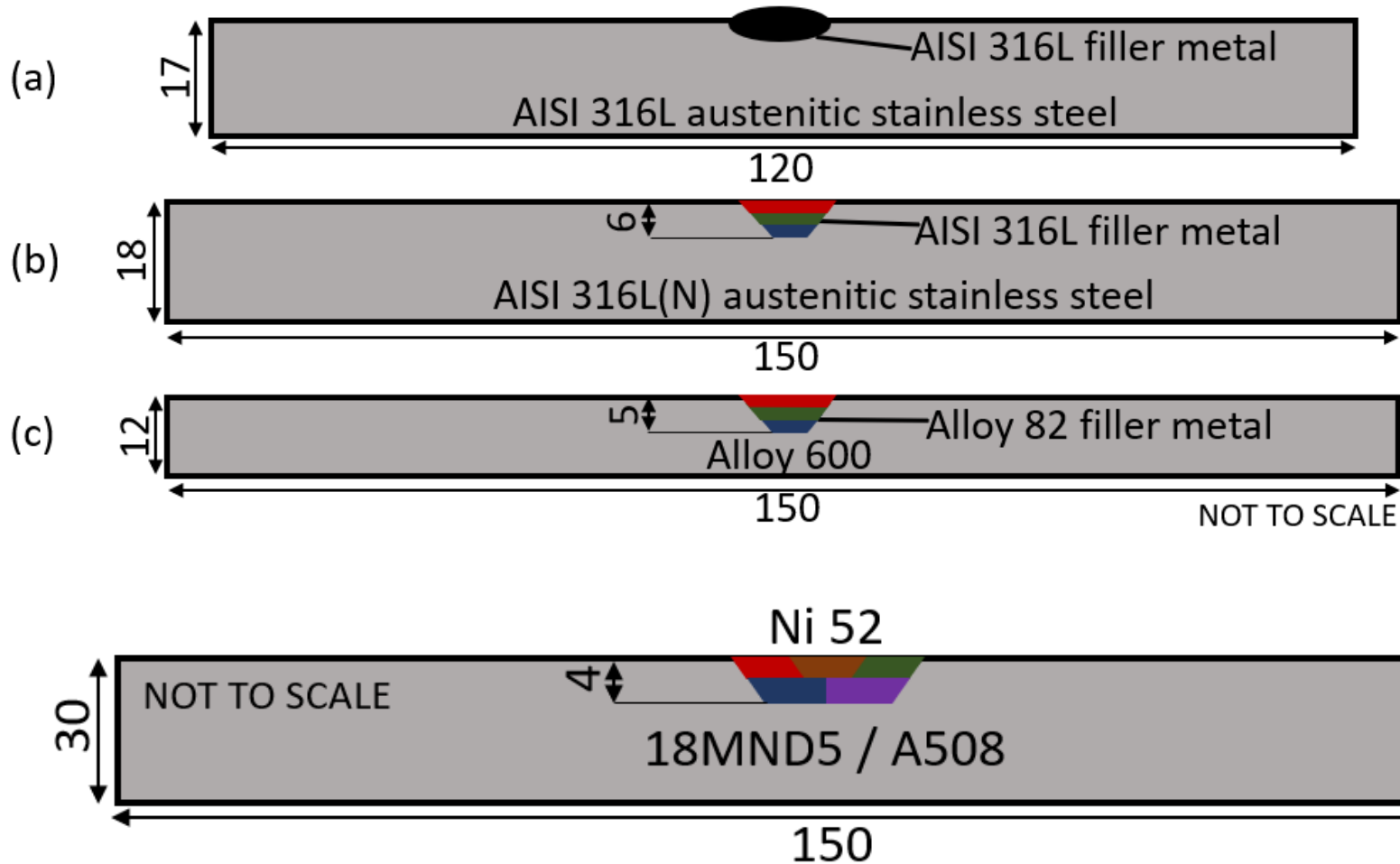
Residual stress through the thickness at weld centre (left) and weld stop (right)

# NeT TG6

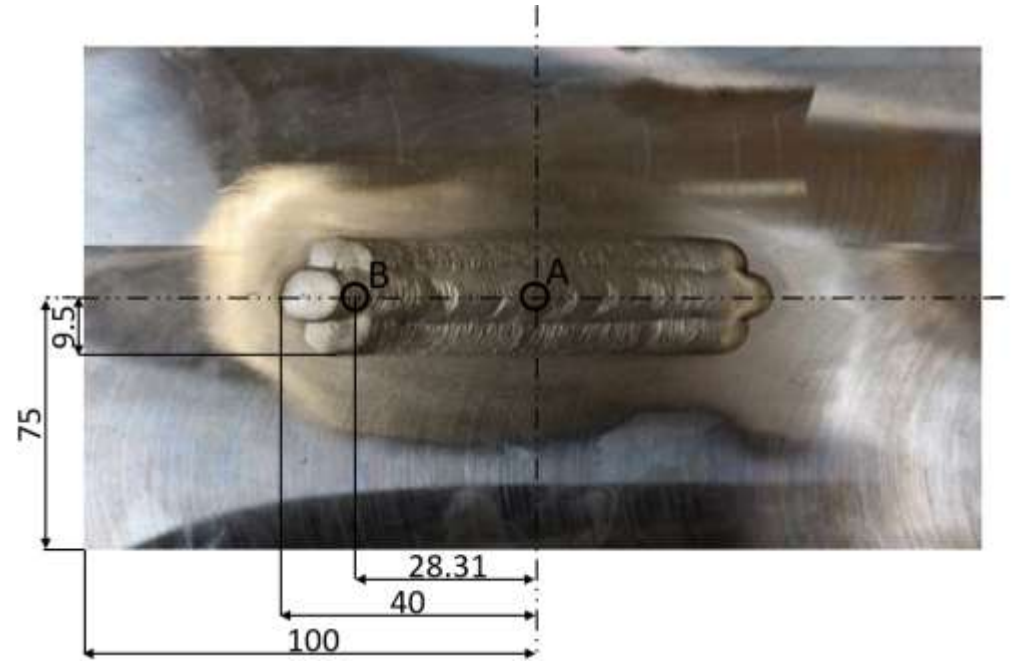
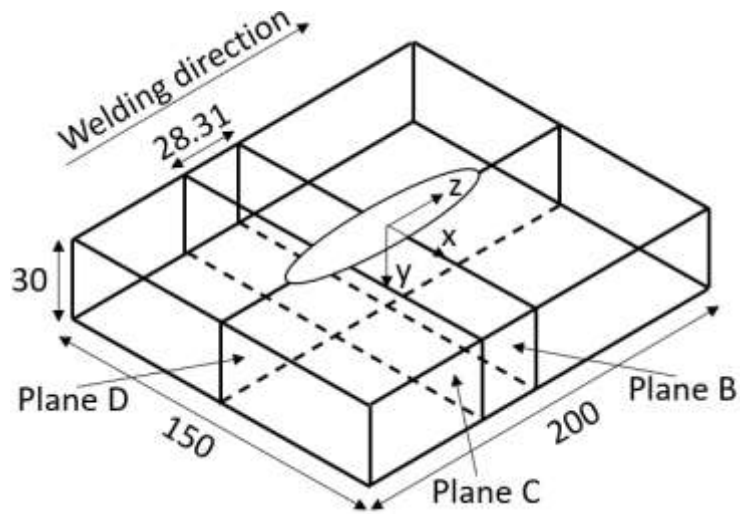


Comparison of residual stress along BD in longitudinal (left) and transverse (right) direction

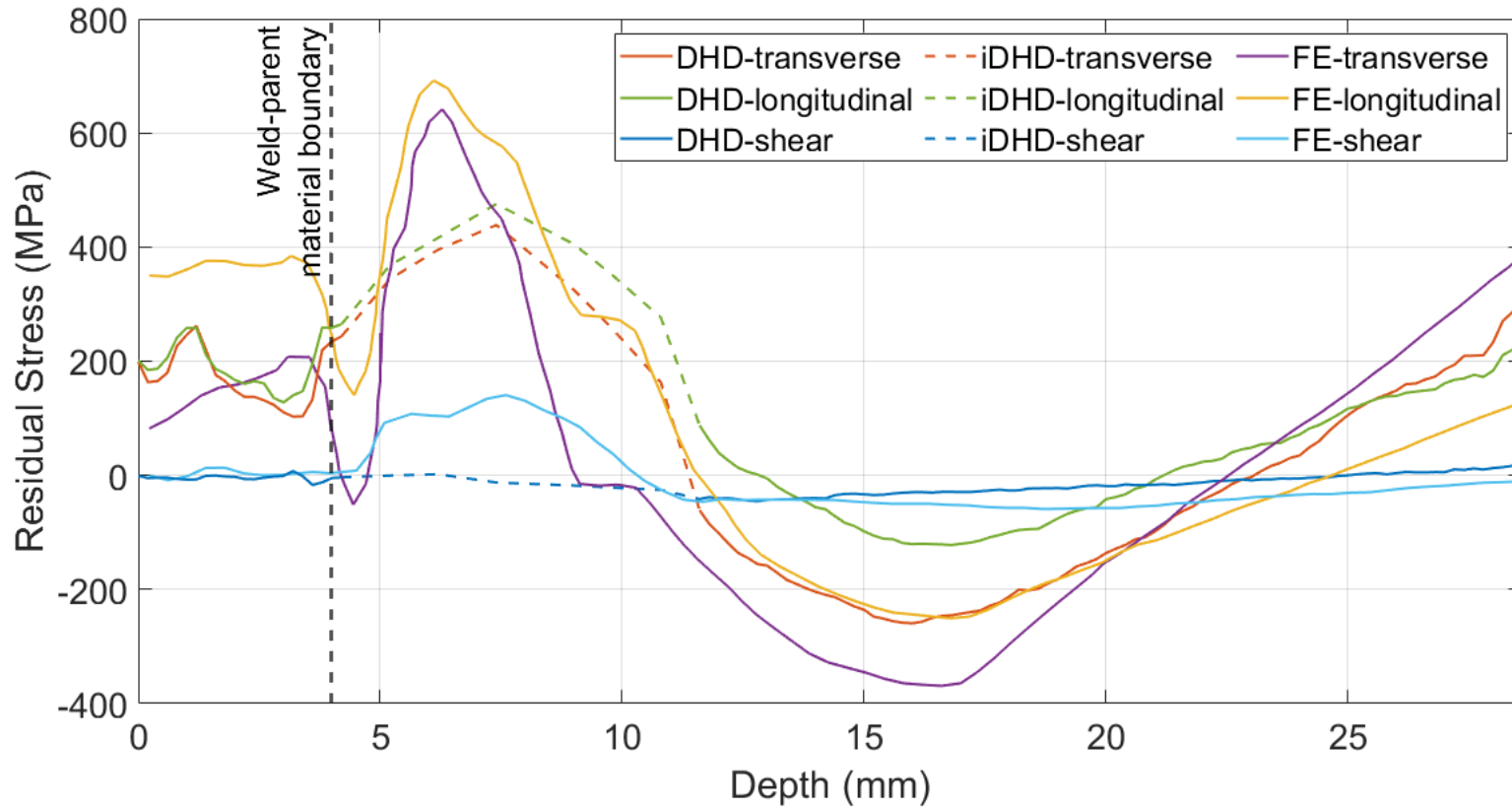
# 🔥 TG8 - 5-pass slot dissimilar weld



# 🔥 TG8 - 5-pass slot dissimilar weld



# 🔥 TG8 - 5-pass slot dissimilar weld



# ...and finally

- Thanks to some super colleagues!
- David Smith
- Kiranmayi Venkata
- Xavier Ficquet
- Karim Serasli
- Devkumar Goudar
- Sayeed Hossain
- Simon Lewis

