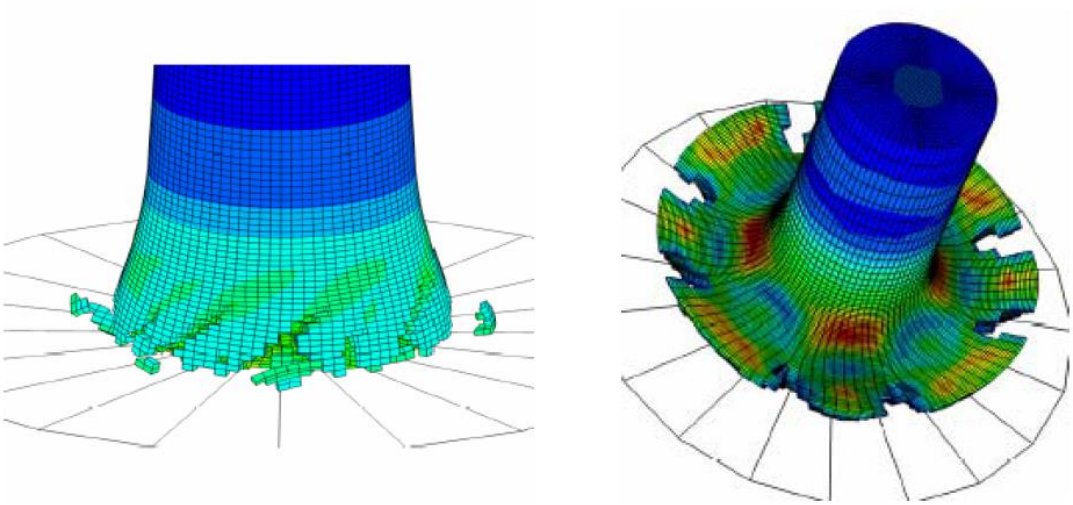
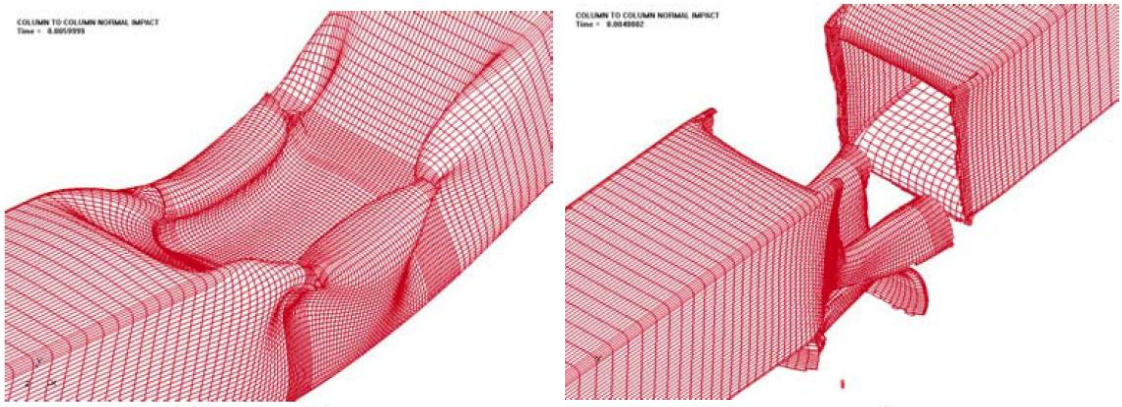
Research on Blast Loading and High Velocity Projectile Impact

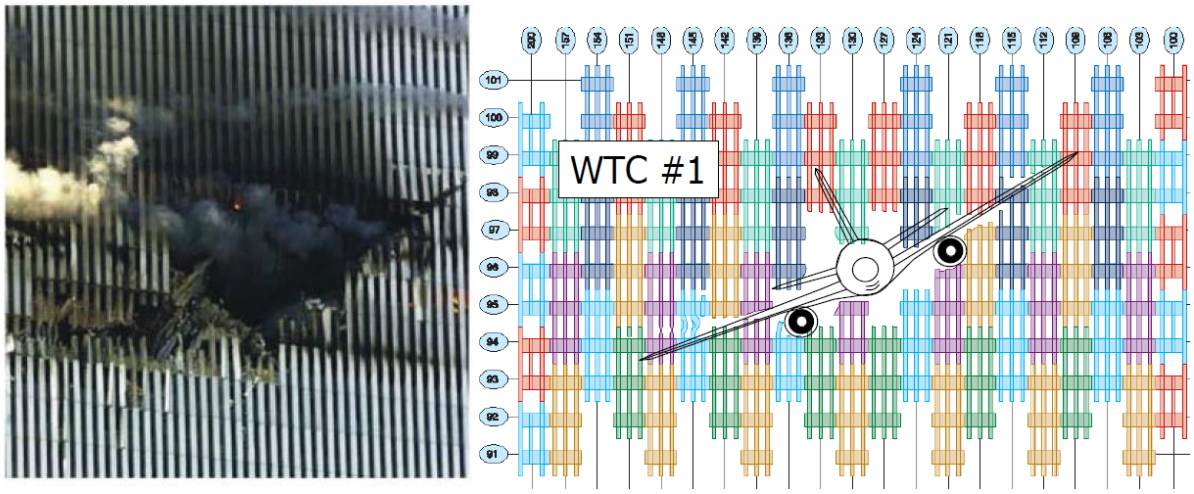


Shear failure at the impact velocity of 270 m/s (left) and petalling failure at the impact velocity of 500 m/s (right)

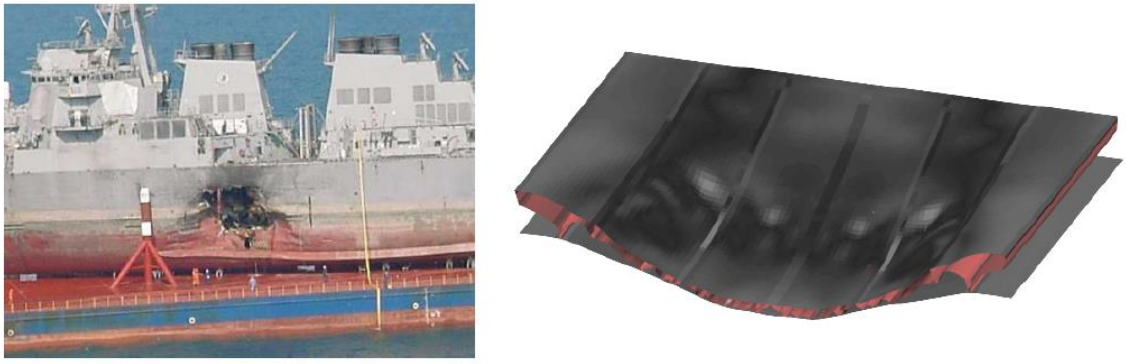


V=240m/sec V=480m/sec

Final stages of deformed and fractured steel column at different impact speeds

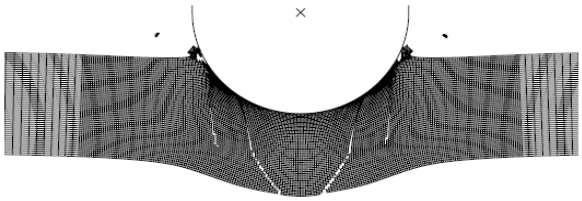


Damage to the South Tower during 911 attack

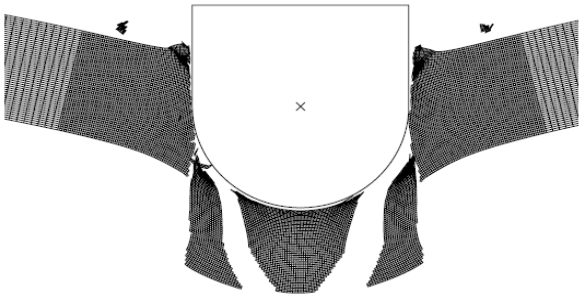


Blast protection using double hull, sandwich structure

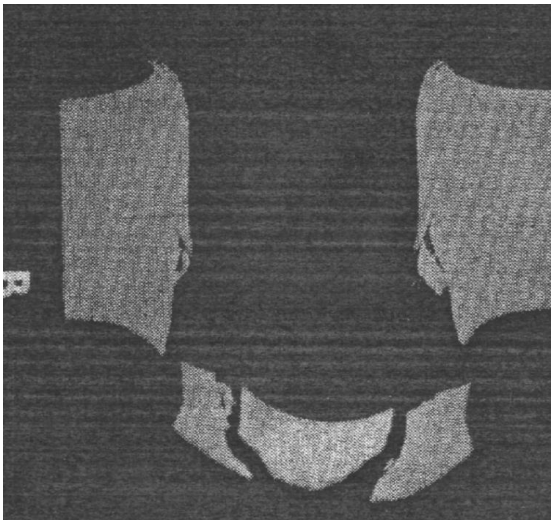
Reconstruction of USS Cole damage



(a) $t = 16\ \mu s$



(b) $t = 60\ \mu s$



Unprecedented accuracy of MIT simulation of the perforation of hemispherical nose projectile into aluminum target

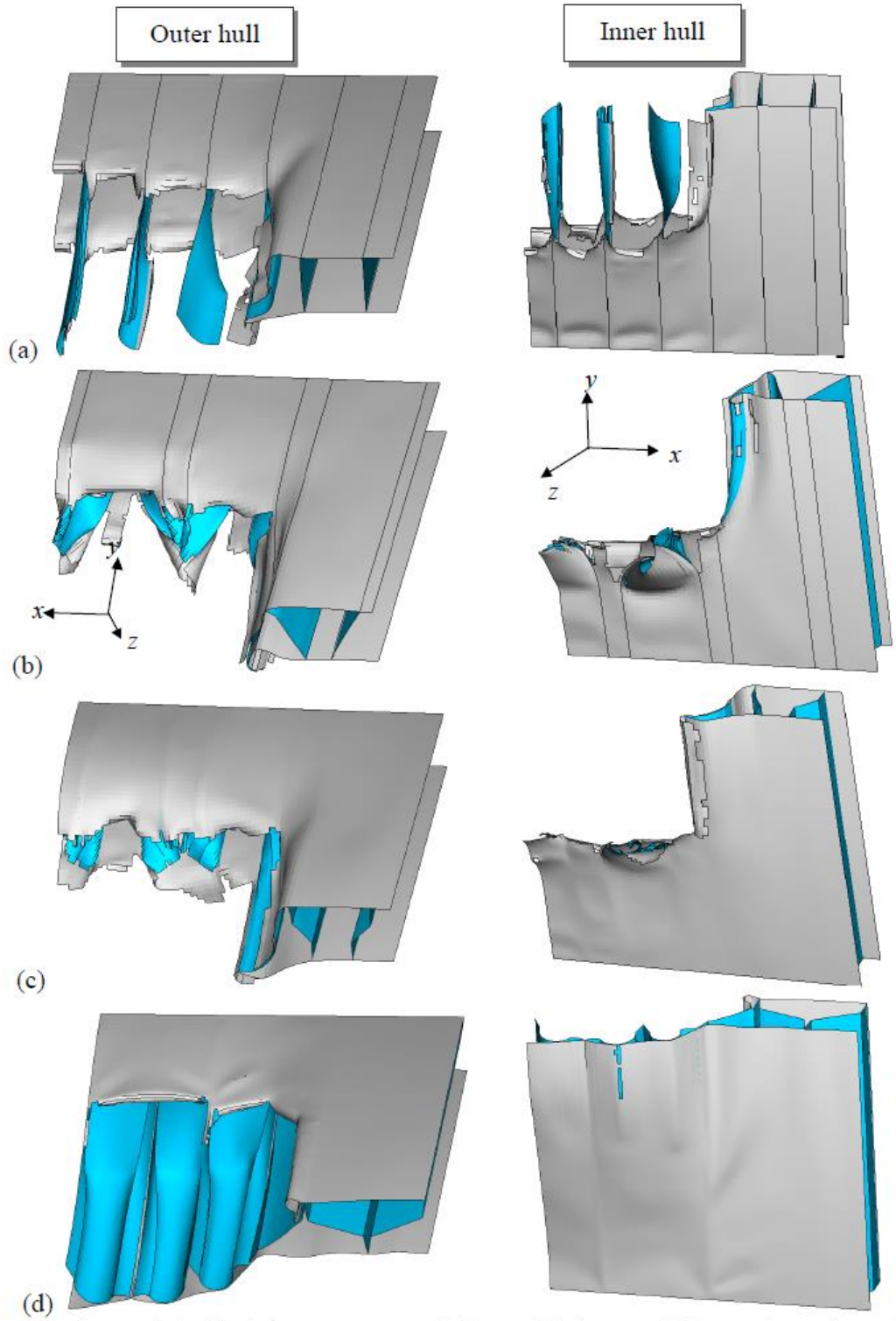


Fig. 9.25 Comparison of the final fracture pattern (1/4 model) in two different views (outer hull on the left, inner hull on the right) of the sandwich panels with four different core arrangements: (a) USDH (optimized, $\widetilde{h}_w$ = 1.14); (b) Navtruss ($\widetilde{h}_w$ =1.0); (c) Y-web ($\widetilde{h}_w$ =1.0); (d) BRAS (optimized, $\widetilde{h}_w$ =1.9). Note that all plates have the same normalized mass ($\widetilde{m} = 0.01$) and loading conditions ($\eta_0 = 0.25, V = 0.73$).