Large Deformation Analysis of RC Columns Subjected to Blast Loads

Objective
Develop an accurate and fast running algorithm for analysis of reinforced concrete columns under combined effects of axial and transverse loads due to blast. Incorporate this algorithm to DSAS.

Nonlinearities to be considered:
- Material nonlinearities,
- Secondary effects and large deformations,
- Tension membrane behavior,
- Buckling.
- Influence of diagonal shear

Validation

Resistance Function

Effect of rebar on resistance function

Load-Impulse Diagram

Conclusions
- Tension membrane may provide significant lateral strength to vertical/horizontal elements under prescribed circumstances,
- The direct shear capacity of the reinforced column is an important factor to take into consideration when designing RC columns to undergo catenary action and lateral forces.