## Kanishka PERERA

Florida Institute of Technology.

**Title:** An abstract critical point theorem with applications to elliptic problems with combined nonlinearities

**Abstract:** We prove an abstract critical point theorem based on a cohomological index theory that produces pairs of nontrivial critical points with nontrivial higher critical groups. This theorem yields pairs of nontrivial solutions that are neither local minimizers nor of mountain pass type for problems with combined nonlinearities. Applications are given to subcritical and critical p-Laplacian problems, Kirchhoff type nonlocal problems, and critical fractional p-Laplacian problems.