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**Energetics of baroclinic response to tidal forcing at steep topography** MASOUD JALALI, Ph.D candidate. University of California, San Diego, SUTANU SARKAR, University of California, San Diego — Topographic features with steep, supercritical slope are sites of large energy conversion from the oscillating barotropic tide to internal waves according to linear theory. However, large local energy loss is also reported in regions with steep supercritical (topographic slope larger than the slope of the wave propagation angle) topography, e.g at Luzon strait. High-resolution, three-dimensional LES have been performed for a triangular obstacle and a more realistic obstacle taken as a scaled-down model of a Luzon Strait cross-section. These simulations resolve turbulence, compute a closed baroclinic energy budget and quantify the local baroclinic energy loss, $q$. The results are used to investigate the dependence of terms in the baroclinic energy budget on the tidal forcing amplitude, $U_0$. Stronger barotropic forcing in the regime of low-to-moderate excursion number with $Ex \leq O(1)$ corresponding to broad, tall topography leads to stronger wave response and higher value of $q$. The rise in the energy loss to turbulence, $P$, is faster than $U_0^2$, varying approximately as $U_0^3$.

Masoud Jalali
Ph.D candidate. University of California, San Diego

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