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Topological photonics in the graphene family DIEGO DALVIT, WILTON KORT-KAMP, Los Alamos National Laboratory, PABLO RODRIGUEZ-LOPEZ, University of South Florida, ALEJANDRO MANJAVACAS, University of New Mexico, LILIA WOODS, University of South Florida — In the last few years, notions of topology have been applied to both electronic and photonic systems, uncovering a myriad of novel effects. The recent expansion of the graphene family by adding silicene, germanene, and stanene opens a promising platform to probe the complex interplay between topology, photonics, and quantum materials in 2D staggered Dirac systems. A central quantity in the description of light-matter interactions at the nanoscale is the photonic local density of states (ph-LDOS) that drives basic processes such as spontaneous emission, thermal emission and absorption. In this talk we show that the ph-LDOS can undergo various phase transitions and present topological behavior, all enabled by the rich electronic phase diagram of the graphene family.

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