Skyrmion lattices and topological insulators in ordinary noninteracting 2DEGs\textsuperscript{1} JIYONG FU, POLIANA PENTEADO, MARCO O. HACHIYA, J. CARLOS EGUES, IFSC/USP, DANIEL LOSS, University of Basel — Electrons in two-subband quantum wells are subject to an intersubband spin-orbit coupling \cite{1} that can lead to interesting physical phenomena such as a giant intrinsic spin Hall effect \cite{2} and topological insulator behavior \cite{3}. When the competing Rashba and Dresselhaus couplings are considered, we find that skyrmionic excitations are possible in these ordinary non-interacting electron systems \cite{4}. These excitations can be probed/imaged via transient spin grating experiments and Kerr rotation spectroscopy with available experimental techniques \cite{5}. Here we will discuss how topological spin textures and topological insulating behavior can occur in ordinary III-V quantum wells. This opens up the unique possibility to investigate topological phenomena such as the skyrmion Hall effect in garden-variety type III-V system. 

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