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Knockout to Probe Proton Contributions to the B(E2) Transition Strength in the C Isotopes[1] HEATHER CRAWFORD, Lawrence Berkeley Natl Lab — The carbon isotopes represent one of the few cases where it is possible to obtain data from stability to the dripline, and to carry out no-core shell model calculations across the isotopic chain. Thus, data along the Z=6 isotopes can provide stringent constraints and tests of modern nuclear structure theories and the isospin dependence of the underlying nuclear force. One experimental observable along the C chain that provides a sensitive probe of nuclear interactions is the B(E2) electric quadrupole transition strength. In the case of the C isotopes, changes in the observed B(E2) from ^{14}C to ^{20}C are understood in terms of a changing proton contribution, rather than decoupling of the valence neutrons from the core as initially postulated. However, to draw final conclusions regarding the extent of any neutron decoupling, it is critical to know how the transition strength is partitioned between the protons and neutrons. Changes and uncertainties in proton occupation will dramatically influence the interpretation. I will report on the results of an experiment carried out at NSCL to probe the amplitude of p-shell protons in the low-lying 2_1^+ states along the C isotopic chain through proton knockout from the corresponding N isotopes.

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Heather Crawford
Lawrence Berkeley Natl Lab

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