Two–proton decay along isospin bridges

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Experimental data on two–proton decay in light nuclei (A $<$ 13) will be presented. The talk will consider what nuclear structure one can glean from the two–proton–decay process itself and use two-proton decay as a tool to find previously unobserved members of isobaric quintets and sextets (isospin bridges). The easiest two–proton emitter to study is ^{6}Be which can be made abundantly with simple reactions. We will explore the momentum correlations between the three decay products in details and consider the ramifications for its mirror nucleus ^{6}He (a two–neutron halo system). Two-proton decay will also be presented for ^{12}O and its isobaric analog state in ^{12}N, both produced in knockout reactions with a ^{13}O beam. The ground state of ^{8}C was known to decay to 4 protons and an alpha particle. We will show it undergoes two sequential steps of two-proton decay. Like ^{12}O, its isobaric analog state was also found to undergo two–proton decay. Finally we will show that the double isobaric analog state of the halo nucleus ^{11}Li in ^{11}B also has a two–proton decay branch. From our new mass measurements obtained with the invariant mass method, we have looked at isospin violation in the A=8 and 12 quintets using the isobaric multiplet mass equation.