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AGATA@GANIL(E744) (ONLINE): Narrow resonances in the continuum of ^{15}F

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Two recent measurements performed at GANIL studied the unbound nucleus ^{15}F using a SPIRAL 1 radioactive ^{14}O beam impinging on the hydrogen nuclei from a thick (100 μm) polyethylene (CH_2) target. The first experiment was performed using the MUST2 light-particle detector array at LISE. The second experiment was part of the campaign using the new MUGAST light particle detector array, the VAMOS spectrometer and the AGATA γ -ray detector array.

The unbound nucleus ^{15}F was shown to be of high interest due to the existence of quasi-bound states located well above the Coulomb barrier. Recently a $1/2^-$ narrow resonance located near the two-proton emission threshold (S_{2p}) has been observed and other narrow states of higher energy, a $5/2^-$ and a $3/2^-$ were predicted ~ 1 MeV above S_{2p} . The previously observed $1/2^-$ state might be a good candidate to study γ emission in an unbound nucleus as the decay between the $1/2^-$ to the $1/2^+$ ground state would be an E1 transition.

This contribution will present our final results on the measurement of the one and two proton emission as well as the current status of the analysis of the gamma decay in an unbound nucleus.

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