The role of pairing in the via the $^{13}C(^{18}O,^{16}O)^{15}C$ reaction at 84 MeV

F.Cappuzzello[1,2], D.Carbone[1,2], M.Cavallaro[1,2], A.Cunsolo[1,2], A.Foti[1,3], M.Bondì[1,2], G.Santagati[1,2], G.Taranto[1,2]

[1] *Dipartimento di Fisica e Astronomia, Università degli Studi di Catania, Italy*
[2] *Istituto Nazionale di Fisica Nucleare – Laboratori Nazionali del Sud, Italy*
[3] *Istituto Nazionale di Fisica Nucleare – Sezione Catania, Italy*

A study of the ^{15}C states was pursued at the Catania INFN-LNS laboratory by the $^{13}C(^{18}O,^{16}O)^{15}C$ reaction at 84 MeV incident energy. The ^{16}O ejectiles were detected at forward angles by the MAGNEX magnetic spectrometer. Thanks to an innovative technique the ejectiles were identified without the need of time of flight measurements. Exploiting the large momentum acceptance (20%) and solid angle (50 msr) of the spectrometer, the ^{15}C energy spectra were obtained with a relevant yield up to about 25 MeV excitation energy. The application of the powerful technique of the trajectory reconstruction did allow to get an energy resolution of about 80 keV FWHM. The spectra show several known low lying states up to about 7 MeV as well as an unknown resonant structure at about 13 MeV. The strong population of these latter together with the measured width of about 5 MeV FWHM reveals the excitation of a collective mode. In addition the measured angular distribution seems to indicate a transfer of a correlated neutron pair in $L = 0$ configuration, compatible with the Giant Pairing Vibration mode. The analysis is on the way and preliminary results will be presented at the Conference