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New analysis for the correlation between gravitational waves and neutrino detectors during SN1987A

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Two major problems, still associated with the SN1987A, are: a) the signals observed with the gravitational waves detectors, b) the duration of the collapse. Indeed, a) the sensitivity of the gravitational wave detectors seems to be small for detecting gravitational waves and, b) while some experimental data indicate a duration of order of hours, most theories assume that the collapse develops in a few seconds.

Since recent data of the X-ray NuSTAR satellite show a clear evidence of an asymmetric collapse, we have revisited the experimental data recorded by the underground and gravitational wave detectors running during the SN1987A. New evidence is shown that confirms previous results, namely that the data recorded by the gravitational wave detectors running in Rome and in Maryland are strongly correlated with the data of both the Mont Blanc and the Kamiokande detectors, and that the correlation extends over a long period of time (one or two hours) centered at the Mont Blanc time.

This result indicates that also Kamiokande detected neutrinos at the Mont Blanc time, and these interactions were not identified because not grouped in a burst.

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