Neural Event Extractor for an Auditory Diagnostic (the enhanced ABR).
The Auditory Brainstem Response (ABR) diagnostic is a commonplace diagnostic for the auditory pathway. It utilizes an acoustic probe to evoke an average response characterized as the ABR. The standard ABR records a 10-12 millisecond response after a probe stimulus then averages the response 300 to 1000 plus times to produce a graphical output.

![ABR Graph](image)

The peaks of the response have been related to various auditory pathway nuclei. These nuclei have subnuclei whose response is average and low pass filtered away into a single or other big peak. For example, peak III is often said to represent the Superior Olivary Complex (SOC). However the SOC is made up of many subnuclei, some of the main ones include the Lateral Superior Olive (LSO), Medial Superior Olive and Medial Nucleus of the Trapezoid Body (MNTB). The system herein described can detect and isolate many of the individual subnuclei responses. This is a new and significant extension to the standard ABR recording system based on the neural extraction algorithm of part 2.
This method finds the neural events and allows the signal space close call to the event to be summed (averaged where required) to create a visual enhanced ABR. Current techniques do not attempt to get subnuclei responses. To date two Lulea University (Sweden) MSc students under the supervision of Brian Lithgow have been located at Monash and have been developing the hardware and software for this system. Dr Frank
Sjoberg and Dr Johan Carlson have collaborated toward improving this diagnostic as well as supporting the supervision of the two MSc students.