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Abstract
It is widely known that the manipulation of medical instrument is directly related to personal safety; if an inaccurate medical instrument is used to assist a medical diagnosis, it will greatly affect the accuracy of the diagnosis, and causes unrecoverable mistake eventually.
This lab has been cooperated with NCKU for a long period of time, from long time of clinical experiment and instrument's Software/Hardware improvement, an non-invasive arterial stiffness measuring instrument has developed for more practical demand. This thesis investigates deeply on how to increase instrument reliability, and a safer and more convenient manipulation method. First, the main body is lab's self-constructed arterial stiffness measuring instrument, the reduction of system noise will be focused at the beginning, and the system noise will be lower down to environment noise level from original 30db. And then the overheat problem with component will be improved, temperature will be reduced from 75 degree to room temperature that is around 30 degree. Second part is to use TRANSIENT-2000 safety standard instrument to proceed testing and pass the safety standard. Lastly, the actual clinical experiment is preceded, new and old model's measuring results will be collected and the variation of both models will be compared. Inaccuracy will emerge after a long-time operation in old model, causes a large variation in the measuring results. This research establishes a standard calibration procedures, it will reduce instrument's inaccuracy, and let the variation in measuring result to be shrunk.
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