

NIMT researches on quantum-based measurement standards laying foundation for new metrological traceability in Thailand

The International System of Units (SI), a successor of the Metric System, has been the corner stone of modern metrology since the time of the French Revolution. The SI was revised significantly in 2019. The revision transformed the SI from a unit-based system to a constant-based system. The new SI is defined by a set of seven constants. NIMT has initiated three research projects to research and build three measurement standards that realise the new definition of the SI. They are an optical atomic clock of Yb ion, a quantum impedance bridge and a Kibble balance. This paper will report on current state of the latter two projects. This will include theoretical background, experiment plans and designs of some major experimental parts. The report will be concluded by providing an outlook of the projects.

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