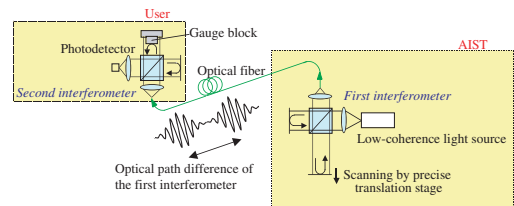


# Remote Calibration of Length Standards using an Optical Fiber

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We have developed a method for remote, accurate calibration of practical length standards (e.g., gauge blocks) using a tandem, low-coherence interferometer developed by the AIST and passing light signals down a single-mode optical fiber. A gauge block of 50 mm length has been calibrated through 3 km single-mode optical fiber. The standard deviation of the calibration was  $0.1 \mu\text{m}$  and the result agrees with that of conventional interferometer within the uncertainty of the calibration. To date, the calibration of length standards required artifacts to be sent to the calibration laboratories. Using the developed technology, the artifact can remain in situ at the user's measuring laboratory. We aim to validate the remote calibration process with external organizations in the future.



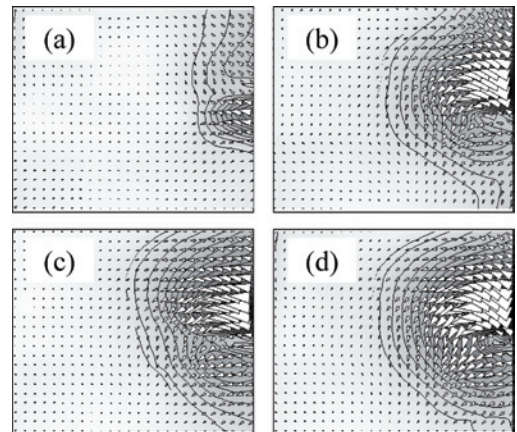
Example of remote calibration system

# New Nondestructive Inspection Technology for C/C Composites

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C/C (carbon fiber-reinforced carbon) composites are used in the space shuttle and are of increasing importance as a high-temperature material. However, there is no useful non-destructive method to test C/C composites. We have developed a new non-destructive test technology using a highly sensitive magnetic sensor, SQUID, and a method to visualize the detoured current, by looking at the matter that current flowing around flaws in material changes of direction. The current map (figure 1) shows area and feature of the composite flaws. For practical implementation of this method, a NDI system with small, lightweight and low magnetic noise refrigerator has been developed.



Current maps corresponding to the progress of flaws in C/C sample by tensile test