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Characterization of Strip Detector Parameters for the SuperB SVT

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The Silicon Vertex Tracker for the SuperB detector will be an evolution of the BaBar SVT, based on double-sided strip detectors. The wider acceptance in polar angle (down to 300 mr) will entail larger incidence angles (up to 73 degrees) on the sensors and a larger number of z-side strips. For optimum performance it would be desirable to continuously vary the sensor pitch on z-side versus position. An easy and convenient way to approximate this configuration is to bond two or three adjacent strips to a single trace of the fanout circuit that connects the strips to the front-end electronics ('pairing' option). In order to accurately measure the total capacitance of strips in various pairing configurations (x2, x3, x4) a test detector has been assembled on a PCB and various strip connection schemes have been implemented by wire bonding, both on p and on n-sides. Capacitance and dissipation factor have been measured versus bias voltage and frequency. In addition, noise measurements versus shaping time are being performed, using a single-channel readout chain. These data will be used to estimate the noise contribution of the detector and to choose the best connection scheme in the SVT. Capacitance and noise measurements made on prototypes of the striplet detectors that are planned to equip the innermost layer of the SVT will also be reported.

for the collaboration

on behalf of the SVT-SuperB Group

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