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**Disturbance growth in boundary layer subjected to weak anisotropic free stream turbulence.** TOSHIAKI KENCHI, MASAHARU MATSUBARA, Shinshu University, Nagano, Japan — The present experiment focused on revealing effect of scales and directional components of free stream turbulence on flat plate boundary layer transition, especially the growth and structure of the disturbances energy in the streamwise direction and transition process. Free stream turbulence generated by a turbulence grid mounted upstream of a contraction, is weak axisymmetric turbulence with strong anisotropy. The experimental results with the anisotropic free stream turbulence show existence of the non-modal growth disturbance even at 0.7 % turbulence intensity. Downstream variation of distribution of the streamwise fluctuation and flow visualization suggest new transition scenario which is mingled non-modal growth process and emergence of wave packets.

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