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**Rotating turbulent convection at high Rayleigh and Taylor numbers** JOSEPH NIEMELA, SIMONE BABUIN, The Abdus Salam ICTP, KATEPALLI SREENIVASAN, New York University — We report heat transport measurements in a cylindrical convection apparatus rotating about the vertical axis. The aspect ratio was 1/2. The working fluid was cryogenic helium gas and the following parameter ranges applied: The Rayleigh number,  $Ra$ , varied in the range  $10^{11} < Ra < 4.3 \times 10^{15}$ , the Taylor number,  $Ta$ , in the range  $10^{11} < Ta < 3 \times 10^{15}$ , the convective Rossby number,  $Ro$ , in the range  $0.4 < Ro < 1.6$ , and the Prandtl number,  $Pr$ , in the range  $0.7 < Pr < 5.9$ . Boussinesq conditions applied quite closely. The heat transport for steady rotation, under all conditions of the present experiments, was smaller than that for the non-rotating case. When the rotation rate varied periodically in time a sharp transition to a state of significantly enhanced heat transport was observed for modulation Taylor numbers  $Ta^* \gtrsim 10^{14}$ , where  $Ta^*$  is based on the maximum of the modulation angular velocity.

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