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Structure of thermal and velocity boundary layers in turbulent thermal convection[1] ANDRE THESS, RONALD DU PUITS, CHRISTIAN RESAGK, Ilmenau University of Technology, FRIEDRICH BUSSE, University of Bayreuth, ANDREAS TILGNER, University of Goettingen — We report a series of experimental investigations of the structure of thermal and velocity boundary layers in turbulent Rayleigh-Benard convection. Our measurements are conducted for Rayleigh numbers $10^8 < Ra < 10^{12}$ with a variable aspect ratio in the range $1 < \Gamma < 10$. The profiles of the mean temperature, mean velocity as well as of temperature and velocity fluctuations are presented and are compared with predictions from different phenomenological theories. Moreover, the appearance of coherent oscillations in the turbulent regimes at different aspect ratios is discussed.

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