

Abstract Submitted  
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**Experimental Study of Homogeneous Isotropic Slowly-Decaying  
Turbulence in Giant Grid-Wind Tunnel Set Up** ALBERTO ALISEDA,  
LEGI, MICKAEL BOURGOIN, LEGI-CNRS, ESWIRP COLLABORATION<sup>1</sup> —

We present preliminary results from a recent grid turbulence experiment conducted at the ONERA wind tunnel in Modane, France. The ESWIRP Collaboration was conceived to probe the smallest scales of a canonical turbulent flow with very high Reynolds numbers. To achieve this, the largest scales of the turbulence need to be extremely big so that, even with the large separation of scales, the smallest scales would be well above the spatial and temporal resolution of the instruments. The ONERA wind tunnel in Modane (8 *m*-diameter test section) was chosen as a limit of the biggest large scales achievable in a laboratory setting. A giant inflatable grid ( $M=0.8$  m) was conceived to induce slowly-decaying homogeneous isotropic turbulence in a large region of the test section, with minimal structural risk. An international team of researchers collected hot wire anemometry, ultrasound anemometry, resonant cantilever anemometry, fast pitot tube anemometry, cold wire thermometry and high-speed particle tracking data of this canonical turbulent flow. While analysis of this large database, which will become publicly available over the next 2 years, has only started, the Taylor-scale Reynolds number is estimated to be between 400 and 800, with Kolmogorov scales as large as a few *mm*.

<sup>1</sup>The ESWIRP Collaboration is formed by an international team of scientists to investigate experimentally the smallest scales of turbulence. It was funded by the European Union to take advantage of the largest wind tunnel in Europe for fundamental research.

Alberto Aliseda  
Department of Mechanical Engineering. University of Washington.

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