

Laser Doppler Velocimetry

40 years of history

M.L. Riethmuller⁽¹⁾ and A. Boutier⁽²⁾

⁽¹⁾Von Karman Institute for Fluid Dynamics
 Chaussée de Waterloo, 72 B-1640 Rhode Saint Genèse Belgium
 E-Mail: riethmuller@vki.ac.be

⁽²⁾ONERA DSG/GS BP 72 F-92322 Châtillon Cedex France
 E-Mail: boutier@onera.fr

ABSTRACT

The Laser Doppler Velocimeter was first imagined and implemented 40 years ago by Yeh and Cummins [1]. Shortly after the publication of this first paper, an increasing number of publications proposed a large variety of systems. This period of very high creativity ended when a few more adequate designs were proposed by several developers. We can consider that the LDV (or LDA) history developed over several periods. The first one (the mushrooming) ended around 1970, the second one (the rationalisation) around 1973 and the third started in 1972. It was characterized by the new availability of commercial systems. We are still in the fourth period that started in 1976 and can be characterized by the possibility for scientists to purchase and use Laser Doppler systems without being an expert in the domain. The scientific community owes a great debt to F. Durst [2] who probably was the essential actor of the rationalisation period.

These 40 years will be described by browsing through this long period with some stops on salient achievements. It will end with a brief presentation of what the future of LDV could be.

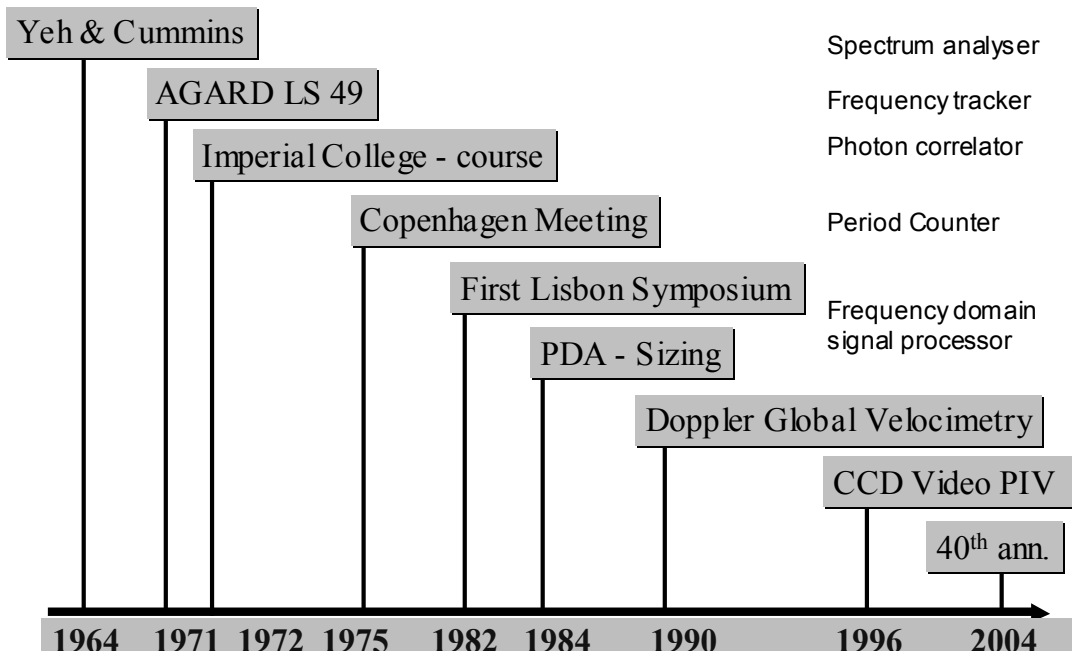


Fig. 1. Simplified chronology of 40 years of Laser Doppler Velocimetry

[1] YEH Y. and CUMMINS H.Z. Localized Fluid Flow measurements with an He-Ne Laser Spectrometer *Applied Physics Letters* 15 May 1964

[2] Durst F. and Whitelaw J.H. Optimization of Optical Anemometers, *Proc. Royal Society London* A324, 1971