

Paper 1.1

Fluid Mechanics Developments and Advancements in the 20th Century

by

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ABSTRACT

The development of fluid mechanics is briefly reviewed and the importance of fluid flows to heat and mass transport in nature as well as to science and engineering is outlined. The early theoretical developments are explained and it is indicated that the basic equations were available at the end of the 18th century. Methods to solve these equations for engineering flows were not, however, developed until the second half of the 20th century. This was an important period for fluid flow research during which all the experimental fluid mechanics methods particularly the optical methods that are available today were also developed.

Fig. 1 provides a chronological summary of important scientists in fluid mechanics. It gives an impression when certain contributions to the subject were made, but measuring techniques are not covered in this figure. Various measuring techniques will be reviewed in the paper emphasising those techniques to which the author and his co-workers were able to make recognised contributions.

The presentation summarises the development of flow visualisation, laser Doppler anemometry, phase Doppler anemometry, particle image velocimetry, etc. and demonstrates their applicability to carry out detailed studies of laminar and turbulent flows.

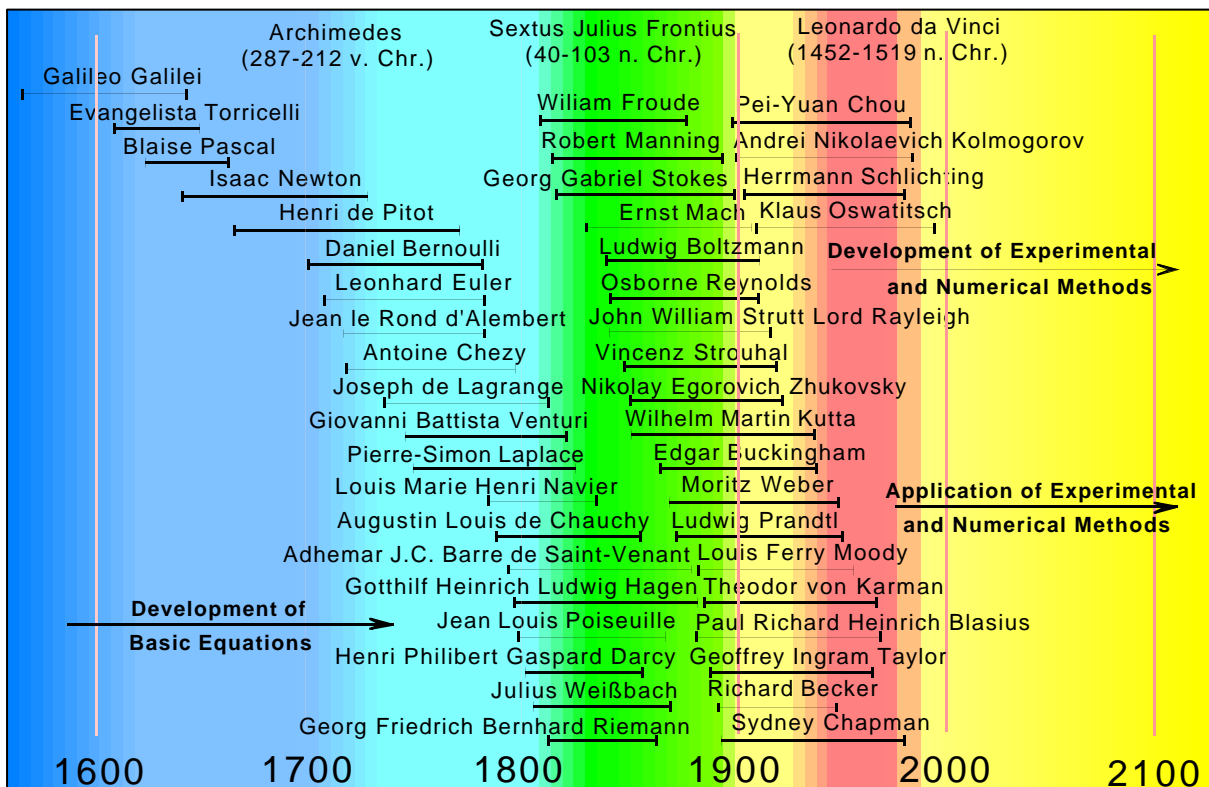


Fig. 1. Historical developments of fluid mechanics

