The quest for the von Kármán constant P.H. ALFREDSSON, R. ÖRLÜ, A. SEGALINI, Linne FLOW Centre, KTH Mechanics, Stockholm, Sweden — Already in 1930 von Kármán presented an expression for the mean velocity distribution in channel and pipe flows, that can be transformed in the today well known logarithmic velocity distribution. He was also able to obtain a value of 0.38 for the inverse of its slope, what we now know as the von Kármán constant (κ). In his case the value was obtained from pressure drop measurements and the, at the same time, formulated logarithmic skin friction law. Since then different values of κ have been suggested ranging from 0.37 to 0.44. Different approaches to determine κ have been suggested over the years, and also the range of the wall normal coordinate of the boundary layer over which the logarithmic law is valid have been debated. Not until independent measurements of the wall shear stress were available has there been a possibility to actually determine κ accurately from the measured mean velocity distribution. We discuss various pitfalls and error sources and based on a new straightforward method to determine κ, we use data from the literature to show that von Kármán's original suggestion of the value of κ seems to be valid also today.

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