Strange molecular anion H2-. History of discovery and exploration of its properties

This molecular anion has lifetime of order of milliseconds and its existence was controversial for a long time. We have explained its lifetime by stabilization due to the fast rotation in 2004. This is strange system where the most stable state has large rotational quantum number. The existence of the anion was unambiguously proved in 2005, but our interpretation of the state was not universally accepted at first. In last 10 years several subsequent experiments confirmed various properties of the ion. I will review the history of the exploration of this ion and explain our interpretation and numerical difficulties to calculate properties of this ion. I will also review various measurements confirming properties of this ion.