Solution to the A1 conjecture

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Abstract

It is well known that the Hilbert Transform H is of weak $(1,1)$ type with respect to the Lebesgue measure. If, instead of the Lebesgue measure, we consider a measure wdx, where w is a positive weight, then we get the following condition: H is of the weak type $(1,1)$ with respect to wdx if and only if w satisfies the so-called A1 condition. The A1 conjecture proposed that the weak $(1,1)$ norm of H can be estimated by the absolute constant times the so-called A1 characteristic of the weight w. It appears that the conjecture is false. In the talk we consider connected problems and explain the approach that disproves the A1 conjecture.