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Measurement of the W boson mass with the D0 detector and combination of the CDF and D0 results for the W boson mass

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We present a measurement of the W boson mass using data corresponding to an integrated luminosity of 4.3 fb-1 collected with the D0 detector during Run 2 at the Fermilab Tevatron ppbar collider. With a sample of 1,677,394 W—> e nu candidate events, we measure M_W = 80.367 +/- 0.026 GeV. This result is combined with an earlier D0 result determined using an independent Run 2 data sample, corresponding to 1 fb-1 of integrated luminosity, to yield M_W=80.375+/-0.023 GeV.We also present the combination of all the Tevatron measurements of the W boson mass, including the results from CDF and from Run I, to obtain the Tevatron average for the mass of the W boson of 80.387 +/- 0.016 GeV and the new world average, including the data from LEP II, M_W=80.385 +/- 0.015 GeV.

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