Cartesian bicategories as symmetric monoidal bicategories

R.J. Wood *

Cartesian *locally ordered* bicategories were defined and studied in [1]. It was clear from the outset that the restriction to locally ordered bicategories could, and should, be removed but in 1987 that seemed to be a technically forbidding task. Subsequent work on equipments, first in the locally ordered case of [2] and culminating in the *cartesian equipments* of [3], suggested that the technicalities could he handled by careful exploitation of the universal properties that define cartesian bicategories. At CT06, reporting on [4], we presented our definition and used it to characterize cartesian bicategories of the form Span($\mathcal{E}$) and Rel($\mathcal{E}$), for suitable categories $\mathcal{E}$. Here we show that the canonical tensor product of a cartesian bicategory endows it with the structure of a symmetric monoidal bicategory.

References

[1] A. Carboni and R.F.C. Walters, *Cartesian Bicategories I*, J. Pure Appl. Algebra 49 (1987) 11–32.

[2] A. Carboni, G.M. Kelly, and R.J. Wood, *A 2-categorical approach to change of base and geometric morphisms I.*, Cahiers Top. et Géom Diff. XXXII-1 (1991) 47–95.

[3] A. Carboni, G.M. Kelly, D. Verity, and R.J. Wood, *A 2-Categorical Approach to Change of Base and Geometric Morphisms II*, TAC 4:5 (1998) 73–136.

[4] A. Carboni, G.M. Kelly, R.F.C. Walters, and R.J. Wood, *Cartesian Bicategories II*, to appear.

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