

		<p>ADDENDUM 1 to ATLAS AGREEMENT</p> <p>522/2013</p>
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ADDENDUM 1 to

to

ATLAS AGREEMENT No. 522 / 13

**Financing of the ABC130 ASICs for the Inner Tracker (ITK)
R&D**

IT IS AGREED AS FOLLOWS:

ARTICLE 1 SCOPE OF THIS ADDENDUM

- 1.1 The purpose of the Addendum is to agree on the cost sharing for the ABC130 re-spin and wafer processing as identified in Appendix 4.

Signed in Geneva,

Steve McMahon

Fido Dittus

ITK Project Leader

Resources Co-ordinator

ATLAS Collaboration

ATLAS Collaboration

Participating institutes, represented by:



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KEK, Japan

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APPENDIX 4 - COMMITMENTS OF FUNDING FOR RE-SPIN AND 6 WAFERS:

We received 4 wafers from the first engineering run. An issue with the data/Xon transceiver design was found resulting in an inability to send data off chip. A single metal mask change is required to repair the issue and second engineering run where we will receive up to 12 wafers is now in progress. The cost for the re-spin of the ASICs is 41,807 CHF. In addition, there are costs for the post processing in the UK (including engineering run and re-spin) as follows:

Dicing of 6 wafers (£ 400 each)	£ 2400
Dicing of the 4 wafers from the first engineering run plus Gel packs for shipping.	£ 3784
Focussed Ion Beam repair of 10 ABC130 chips	£ 20,370
Total expenditure in the UK (1 £ = 1.47 CHF)	£ 26,554 (= CHF 39,934)

The re-spin plus wafer processing costs will be shared among the participating institutes in the same proportions as the first engineering run:

INSTITUTE	SHARE	6-WAFER RE-SPIN	WAFER PROCESSING	TOTAL
Endcap	36%	CHF 15'051	CHF 14'376	CHF 29'427
Czech/Charles U.	3%	CHF 1'254	CHF 1'198	CHF 2'452
Germany/BMBF (Freiburg)	8%	CHF 3'345	CHF 3'195	CHF 6'539
Germany/DESY	8%	CHF 3'345	CHF 3'195	CHF 6'539
Netherlands/NIKHEF	8%	CHF 3'345	CHF 3'195	CHF 6'539
Poland/AGH Univ.				
Slovenia/JSI	3%	CHF 1'254	CHF 1'198	CHF 2'452
Spain/IFIC	3%	CHF 1'254	CHF 1'198	CHF 2'452
Sweden/Uppsala	3%	CHF 1'254	CHF 1'198	CHF 2'452
Stave	45%	CHF 18'813	CHF 17'970	CHF 36'784
UK/STFC	22.5%	CHF 9'407	CHF 8'985	CHF 18'392
US/DOE	22.5%	CHF 9'407	CHF 8'985	CHF 18'392
Supermodules	19%	CHF 7'943	CHF 7'588	CHF 15'531
Japan/KEK	16%	CHF 6'689	CHF 6'390	CHF 13'079
Switzerland/Geneva	3%	CHF 1'254	CHF 1'198	CHF 2'452
TOTAL	100%	CHF 41'807	CHF 39'934	CHF 81'741

The cost for future production runs (wafer production + post processing) is currently estimated to be about 81 KCHF per 24 wafers (3120 die). Two production runs may be sufficient to meet the request as long as the yield of good die is greater than 78%. Three will be sufficient for yields between 55 and 78%, and four will be sufficient for yields between 43-55%. The cost sharing of these future submissions will be documented in further addenda to this Agreement.