ATLAS EXPERIMENT	CERN	**ATLAS AGREEMENT 589/2018**

40'000 CHF from T577020 **26'728 CHF from T577020**	**to T541500** **to T541700**	**16 May 2018**

ATLAS AGREEMENT No. 589/18

Assembly and test of 214 RX opto plugins for the new Pixel detector readout

BETWEEN

The **ATLAS Collaboration**
Represented by the ATLAS Resources Coordinator

on the one hand,

AND

Ohio State University (OSU),
Represented by the OSU ATLAS Pixel Team Leader

on the other hand.

CONSIDERING THAT:

- The United States has signed the ATLAS construction MoU (RRB-D 98-44 rev.) and M&O MoU (CERN-RRB-2002-035);
- The US contributes to the Inner Detector sub-systems;
- Ohio State University contributes to the Pixel sub-detector;
- The M&O-A for the ATLAS experiment includes efforts to upkeep the detector in a good working order. This requires, among other, the production of a new generation of the off-detector optical transmitters (RX plugins for PIXEL BOC cards) to be used as part of the new Pixel readout system;

IT IS AGREED AS FOLLOWS:

ARTICLE 1 SCOPE OF THE AGREEMENT

1.1 The purpose of the Agreement is to record the financial effort made by – and within – the ATLAS Pixel collaboration to achieve the above goals.

ARTICLE 2 OBLIGATIONS OF THE PARTIES

2.1 In order to equip the IBL-type BOC cards of the new Pixel detector readout with new RX plugins, Ohio State University has fabricated opto-packs and mounted them on Rx PCBs provided by Bern.

Basic functionality tests were also performed at OSU in a controlled environment.

2.2 This agreement is for the 214 assemblies (including spares) that have passed all the tests and have already been shipped to Bern.

2.3 The cost of parts, the labor of one technician and one engineer is given in Article 3.1 of this agreement.

ARTICLE 3 FUNDING

3.1 The total cost of the work package described in Article 2 and detailed in Annex 1 is agreed to be 66'700 CHF. ATLAS shall pay 40 kCHF to the ATLAS-USA account T541500, and 26'700 CHF to the ATLAS-US Ohio-State account T541700.

ARTICLE 4 DURATION OF THE AGREEMENT

4.1 This Agreement is valid until December 31st, 2018. It can be extended by mutual consent using appropriate Addenda.

ARTICLE 5 CO-ORDINATION AND ADDRESSES FOR CORRESPONDENCE

5.1 All documents concerning this agreement shall bear the reference:

"ATLAS Agreement No. 589/18"

5.2 The performance of this agreement shall be co-ordinated by the following persons:

for the ATLAS Collaboration:

ATLAS Pixel Project Leader,
CERN – Department EP
CH-1211 Geneva 23, SWITZERLAND (attn. M. Kocian)

for the OSU:

Ohio State University,
191 West Woodruff Ave,
Columbus OH 43210-1117 USA (attn. K. K. Gan).

ARTICLE 6 ARBITRATION

6.1 Any differences arising during the execution of this agreement will be submitted to the ATLAS Spokesperson, which will propose solutions in the best interest of the Collaboration.

Signed in Geneva, 17 May 2018

(M. Kocian)

Pixel Detector Project Leader
ATLAS Collaboration

(F. Dittus)

Resources Coordinator
ATLAS Collaboration

(K.K. Gan)

OSU-ATLAS Pixel Team Leader
Ohio State University, US

(S. Rajagopalan)

US-ATLAS National Contact Physicist

ANNEX 1

STATEMENT OF WORK

Description of work carried out at OSU for the new Pixel detector readout.

1. Fabrication of 214 PIN opto-packs, including:
   - procurement of the M&S needed to produce 214 opto-packs that pass the QA
   - alignment of the guide pins in the opto-packs
   - alignment of the PIN arrays
   - wire bonding of the PIN arrays
   - perform QA on the assembled opto-packs
2. Mounting the opto-packs and ASIC on the RX PCBs:
   - mount the RX ASICs on the PCBs
   - clean the wire bond area
   - wire bonds and conduct pull test to ensure the cleanness of the wire bond area
   - wire bonds the ASICs and opto-packs
   - perform basic functionality test
   - encapsulate wire bonds
   - perform basic functionality test

The following is a list of the major cost items (CHF):

M&S	
ULM 5 G PIN	5,779
Alumina bases	4,990
Gluing jig	2,670
Guide pins	3,355
Miscellaneous	5,585
Subtotal	22,379
Labor	
Opto-pack	21,925
RX assembly	21,507
Subtotal	43,431
Shipping	918
Total	66,728