Widelane Ambiguity Resolution Between Different Receiver Types

- It is now apparent that—in addition to P1/P2 and C1/P2' receivers—a third receiver class must be recognized: C1/P2 receivers.
- Known receivers of this type are: Leica SR9600, Leica CRS1000, Novatel OEM4, Trimble MS750, Trimble 4700, Trimble 5700. A corresponding receiver table is maintained and regularly posted to: `http://www.aiub.unibe.ch/download/BSWUSER/GEN/RECEIVER`.
- The consideration of P1–C1 differential code bias (DCB) values is a must when making use of code measurements coming from different receiver types for widelane ambiguity resolution, or precise clock estimation. Updated P1–C1 bias values are accessible, e.g., at: `http://www.aiub.unibe.ch/download/CODE/P1C1.F`

Widelane Ambiguity Resolution Between Different Receiver Types (Continued)

- The RINEX conversion utility, CC2NONCC, is an easy-to-use tool to correct P1–C1 bias values and to make given code measurements consistent to P1/P2 data, respectively. The CC2NONCC program is available at: `ftp://igscb.jpl.nasa.gov/igscb/software/cc2noncc/cc2noncc.f`

- The following corrections are made:
  - P1/P2: No correction
  - C1/P2': C1 $+$ (P1 $-$ C1) $=$ P1 and P2' $+$ (P1 $-$ C1) $=$ P2
  - C1/P2: C1 $+$ (P1 $-$ C1) $=$ P1

  Note that P2' stands for the linear combination C1 $+$ (P2 $-$ P1).

How to Use P1–P2 and P1–C1 Satellite DCB Information

The following table gives the corrections due to satellite-specific DCBs for the most important linear combinations derived from various combinations of code observable types:

LC	P1/P2	C1/P2'		C1/P2	
L1	$+1.55 \cdot B_{P1-P2}$	$+1.55 \cdot B_{P1-P2}$	$+B_{P1-C1}$	$+1.55 \cdot B_{P1-P2}$	$+B_{P1-C1}$
L2	$+2.55 \cdot B_{P1-P2}$	$+2.55 \cdot B_{P1-P2}$	$+B_{P1-C1}$	$+2.55 \cdot B_{P1-P2}$	
L3	0		$+B_{P1-C1}$		$+2.55 \cdot B_{P1-C1}$
L4	$-B_{P1-P2}$	$-B_{P1-P2}$		$-B_{P1-P2}$	$+B_{P1-C1}$
L5	$-1.98 \cdot B_{P1-P2}$	$-1.98 \cdot B_{P1-P2}$	$+B_{P1-C1}$	$-1.98 \cdot B_{P1-P2}$	$+4.53 \cdot B_{P1-C1}$
L6	0		$-B_{P1-C1}$		$-0.56 \cdot B_{P1-C1}$

L3, L4, L5, and L6 denote the ionosphere-free, geometry-free, wide-lane, and "Melbourne-Wübbena" LC, respectively (following the notation used in the Bernese GPS Software).

The factors involved are computed as $\nu_2^2/(\nu_1^2 - \nu_2^2) = 1.546$, $\nu_1^2/(\nu_1^2 - \nu_2^2) = 2.546$, $\nu_1\,\nu_2/(\nu_1^2 - \nu_2^2) = 1.984$, $\nu_1/(\nu_1 - \nu_2) = 4.529$, and $\nu_1/(\nu_1 + \nu_2) = 0.562$, where ν_1 and ν_2 are the basic carrier frequencies.