# Minuties-Delta

The data

100 fingerprint cards were choosen in order to get both thumbs having ulnar loops with at least 20 ridges between the delta and the core of the loop. The same was made to get cards with the clean delta and a control zone on each of the palms. The control zone was defined as a zone were the flow of the ridge is straight and parrallel situated in the thenar zone, just over the thumb.

These different zones were extracted and croped with a 3 x 3 cm square. The part containing a delta were centered on it and the upper axis was placed north. For the control zone, the square was aligned with the edge of the print and the upper part on the middle line.

For each image the minutiaes were annotated with their position and the orientation. These are represented in the plots separated by zones and hand.
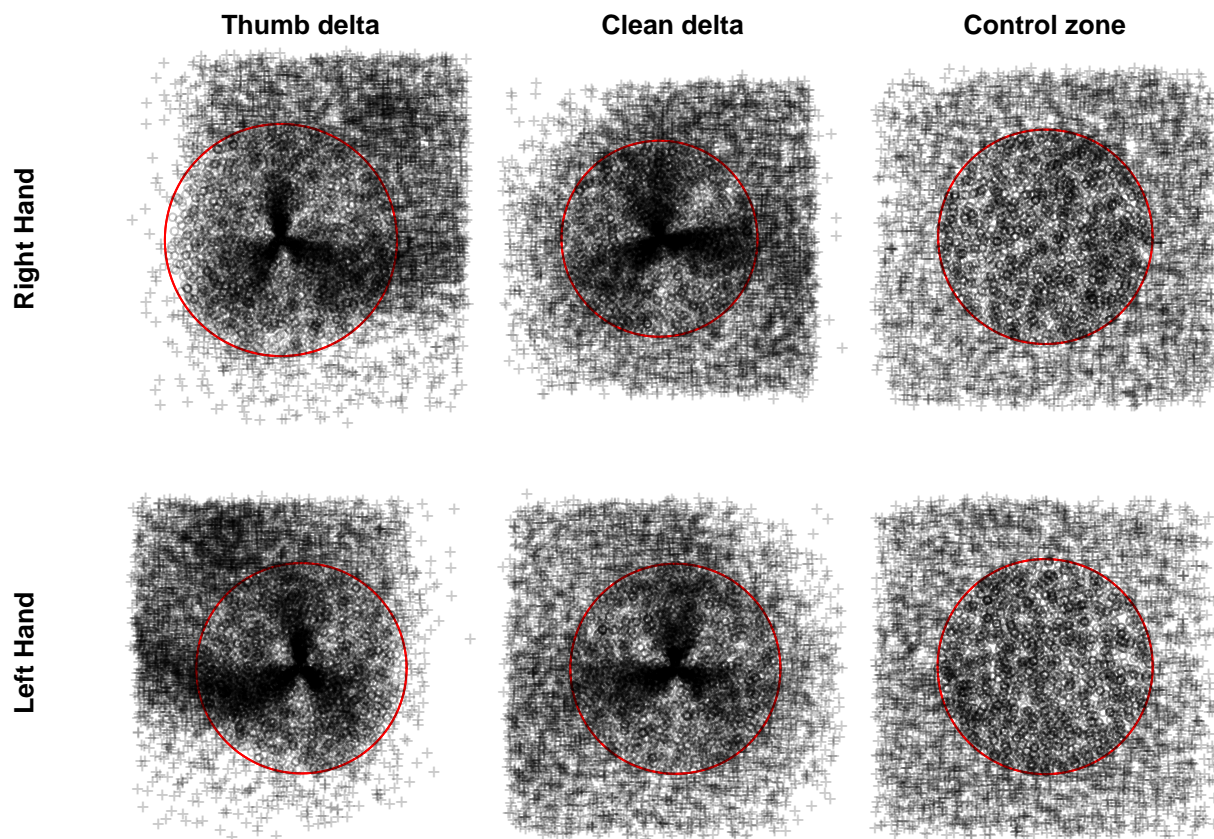
The green circle is the window in which the analysis will be made. The diameter is of 1.6 cm which allows to avoid the problem of edge effects. The points out of this window won't be used for the analysis.

CSR testing

A CSR test (Complete Spatial Randomness) was done on each print individually. This was made using a second order K test accordingly to what was done in Chen and Moon 2006.

	Right	Left	total (%)
Thumb	10	4	14 (7 %)
Clean delta	25	19	44 (22 %)
Control	66	68	134 (67 %)

	Right	Left	total (%)
Thumb	39	35	74 (37 %)
Clean delta	78	78	156 (78 %)
Control	87	86	173 (86.5 %)

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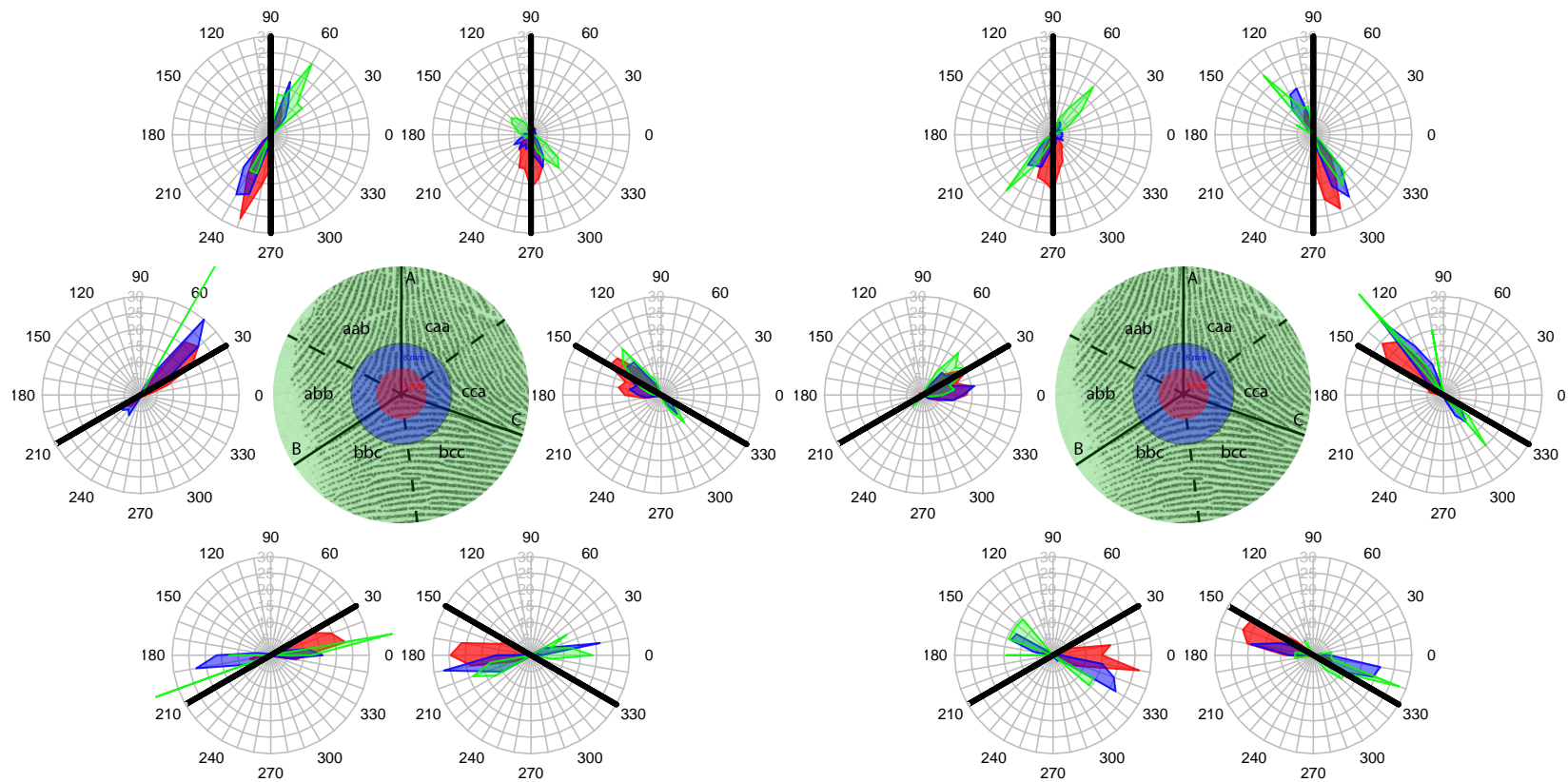|	Right	Left	total (%)
Thumb	29 / 61	33 / 63	62 / 124 (31 % /62 %)
Clean delta	50 / 25	55 / 25	105 / 50 (52.5 % /25 %)
Control	14 / 20	12 / 20	26 / 40 (13 % /20 %)

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	Right	Left	total (%)
Thumb	0 / 61	0 / 65	0 / 126 (0 % /63 %)
Clean delta	0 / 22	0 / 22	0 / 44 (0 % /22 %)
Control	2 / 11	2 / 12	4 / 40 (2 % /11.5 %)

Delta propre droit et gauche
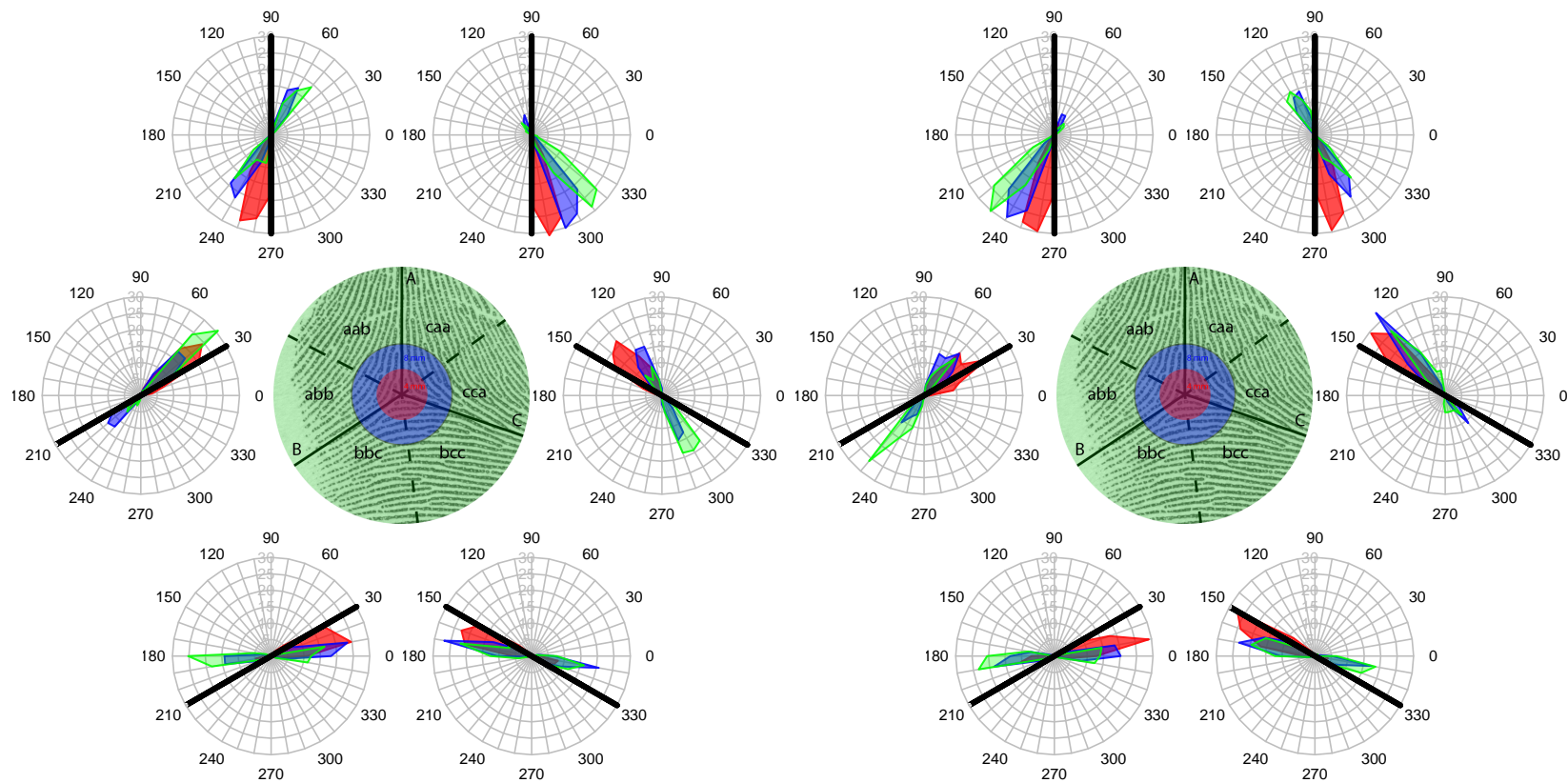
Delta de pouce droit et gauche

Appendix

There are non-printed appendixes which would result in other pdf files. To see them set the chunk option from "eval = F" to "eval = T".