Landscape Block Circle Algorithm :Equations 12 to 14 Marking out the Outer Ring

The solutions to the algorithm are:

- R_f shown in Figure 1 which describes the circle upon which to set the P_1 and P_2 corners of the blocks shown in Figure 4. R_f is set to the R_6 for the outer ring.
- $C_{h(n)}$ for(n =1 to C_u) shown as the line segments between blocks of the outer ring in Figure 2. The segment lengths between the P_1 (or P_2) corners of the blocks will evenly space the blocks about the circle described by R_f.
    - C_u is the number of unique lengths for the chords. C_u is about half of B_r the number of blocks per a ring.

All of the radii (R_1, R_6, and R_f) have one end point at the center of the circle. The other endpoint of R_1 is P_7. Possible endpoints for R_6 and R_f are P_1 and P_2.

EQN :12 $R_6 = \sqrt{(R_1^2-(W_f/2)^2)}$

R_1 and $W_f/2$ are perpendicular sides of a right triangle with R_6 being the hypotenuse

so $c^2 = a^2 + b^2$ describes the triangle

taking the square root gives $c = \sqrt{(a^2 + b^2)}$

substituting R_6 for c; R_1 for a; and W_f for b gives

$R_6 = \sqrt{(R_1^2-(W_f/2)^2)}$

EQN :13 C_u = floor(B_r/2+.51)

formula works for even and odd values of B_r (number of blocks in a ring) for C_u (number of chords of unique length)

EQN 14: $C_{h(n)} = \sqrt{(2 \bullet R_6^2(1-\text{cosine}(\theta)))}$ for(n =1 to C_u)

law of cosines: $c^2 = a^2 + b^2 - 2ab\text{cosine}(\gamma)$

if $a = b$ then $c^2 = 2\,a^2 - 2a^2\text{cosine}(\gamma)$

and then $c^2 = 2\,a^2(1-\text{cosine}(\gamma))$

taking the square root of both sides gives $c = \sqrt{(2\,a^2(1-\text{cosine}(\gamma)))}$

substituting θ for γ; R_6 for a; and $C_{h(n)}$ for c gives

$C_{h(n)} = \sqrt{(2 \bullet R_6^2(1-\text{cosine}(\theta)))}$

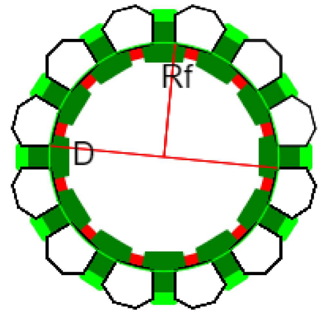


Figure 1

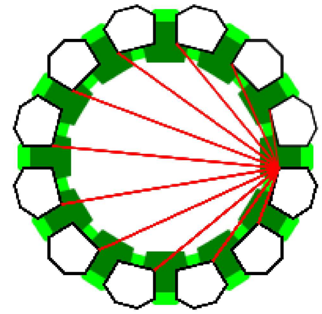


Figure 2

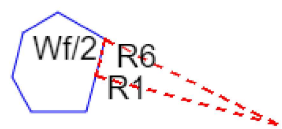


Figure 3

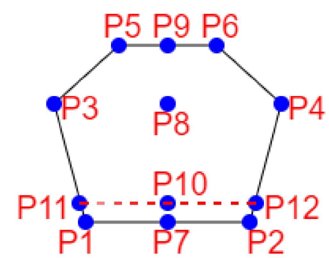
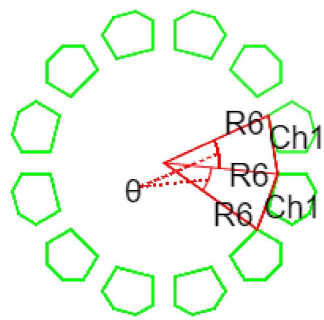


Figure 4



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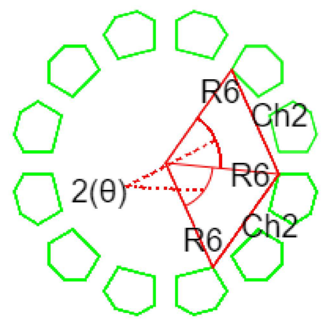

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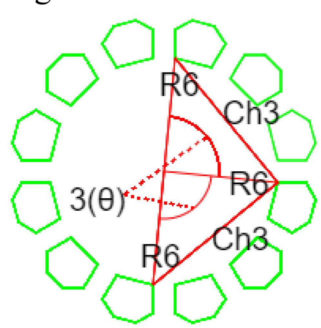

Figure 7

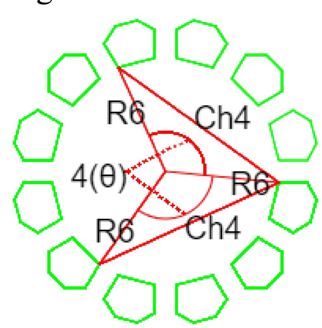

Figure 8

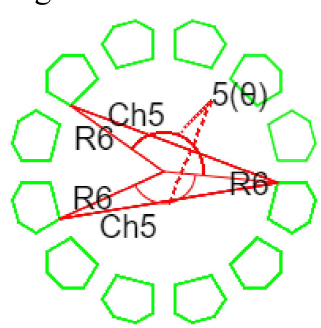

Figure 9

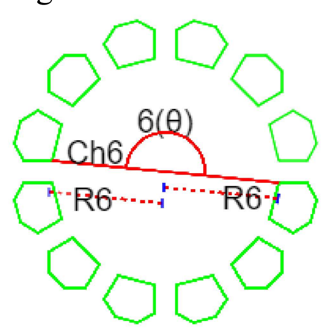

Figure 10