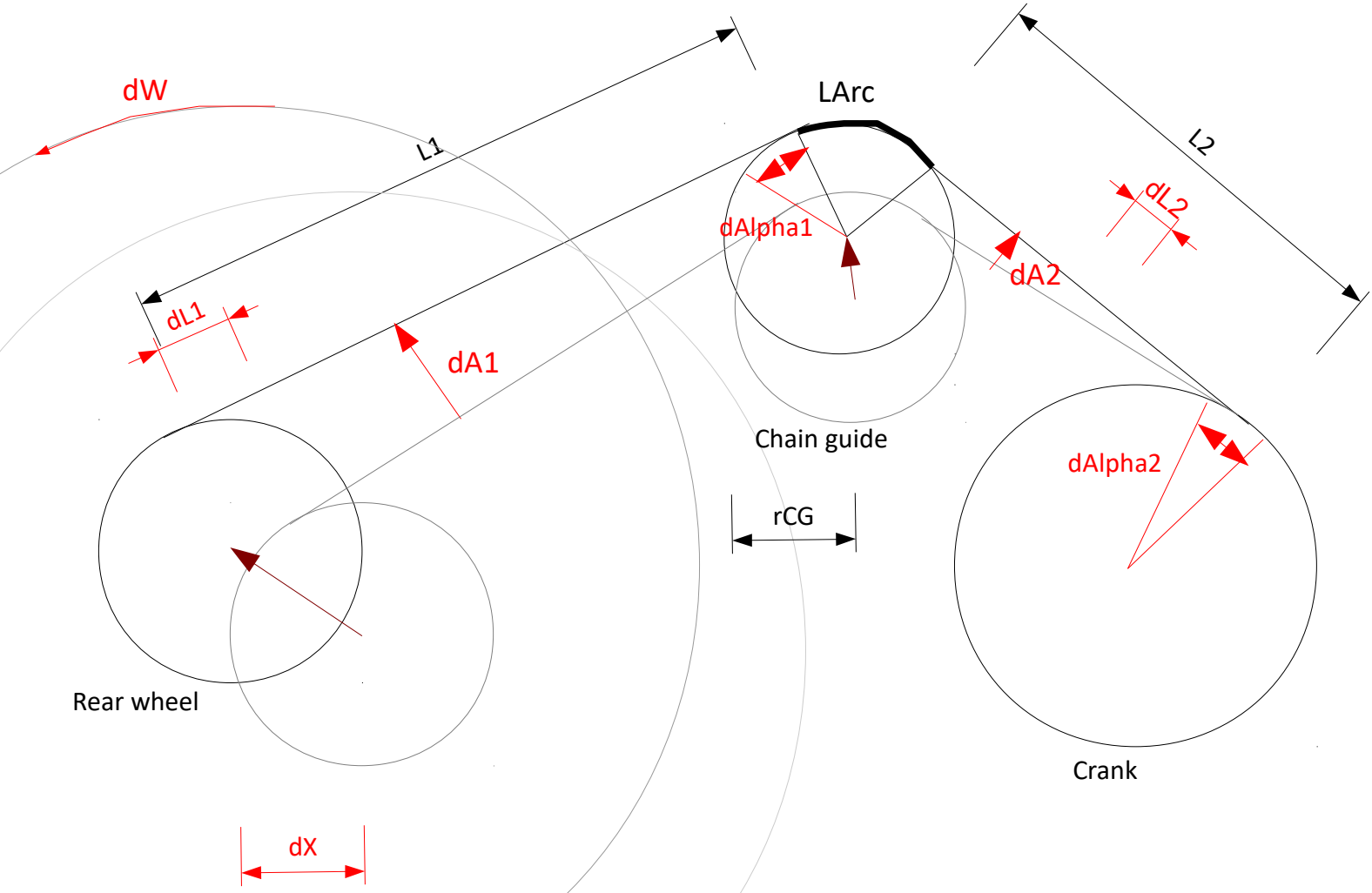

Simple chain guide – chain length change with suspension movement causing crank/pedal feedback/rotation

Crank rotates (in radians): dL / rCrank
where
dL = dLW + dL1 + dL2 + dLArc + dLAlpha1 + dlAlpha2

where
dLW: chain moves backwards as rear wheel moves back by axle path, so rotates backwards.
dLW = dW * rRearCogs = dX / rWheel * rRearCogs

dL1, dL2 : chain length change between tangent points of chain on cogs

dLArc : chain's length laying on chain guide changes as angles change

dLAlpha : chain laying on/off cogs make a change in length if cog numbers differ
dLAlpha1 = dAlpha1 * rCG = dA1*((rRearCogs/rCG)-1) * rCG
dLAlpha2 = dAlpha2 * rCrank = dA2*((rCG/rCrank)-1) * rCrank

Note: If chain guide roller is above the chain, dLAlpha is calculated differently.

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