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description: History of L3C reduction strategies developed by Matt DiPalma for Rubik's Cube.

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import TwistyPlayer from "@site/src/components/TwistyPlayer";

import Exhibit from "@site/src/components/Exhibit";

import YouTube from "@site/src/components/YouTube";

import ImageCollage from '@site/src/components/ImageCollage';

# DiPalma L3C Reduction

<TwistyPlayer

alg="x2 U L U' R' U L' U' R"

controlPanel="none"

/>

A collection of L3C reduction strategies proposed by [Matt DiPalma](CubingContributors/MethodDevelopers.md#dipalma-matt).

## Speed-Heise

Speed-Heise was first proposed in December, 2014 on the Italian site speedcubing.it [1].

![](img/DiPalmaL3CReduction/Speed-Heise1.png)

Two versions of Speed-Heise were added to DiPalma's blog in March, 2015. One was called Simplified [2] and the other was called Complete [3].

![](img/DiPalmaL3CReduction/Speed-Heise2.png)

![](img/DiPalmaL3CReduction/Speed-Heise3.png)

[Click here for more step details on the SpeedSolving wiki](https://www.speedsolving.com/wiki/index.php/Speed-Heise)

## Tripod Supplement

In March, 2015 DiPalma developed the algorithms for the Tripod method to permute all edges and solve the DFR corner [4].

![](img/DiPalmaL3CReduction/TMS.png)

## Cardan Reduction

In March, 2017 DiPalma proposed Cardan Reduction [5].

![](img/DiPalmaL3CReduction/CR.png)

## CR†

CR† was proposed in the same post as Cardan Reduction [5].

![](img/DiPalmaL3CReduction/CR+.png)

## SIMPLE

SIMPLE was proposed in August, 2017 [6].

![](img/DiPalmaL3CReduction/SIMPLE.png)

## Early Developments

In July, 2012, DiPalma posted a couple of messages to speedsolving.com that may have been the start of DiPalma's exploration of L3C ideas [7, 8].

![](img/DiPalmaL3CReduction/Origin1.png)

![](img/DiPalmaL3CReduction/Origin2.png)

# References

|  |  |
| --- | --- |
| [1] | M. DiPalma, "Algoritmi "Speed-Heise"," SpeedCubing.it, 4 December 2014. [Online]. Available: https://www.speedcubing.it/forum/Thread-Algoritmi-Speed-Heise. |
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| [3] | M. DiPalma, "Complete Speed-Heise (EN)," WordPress - DiPalma, 4 March 2015. [Online]. Available: https://dipalm.wordpress.com/2015/03/04/complete-speed-heise/. |
| [4] | M. DiPalma, "Tripod Method Supplement (EN)," WordPress - DiPalma, 5 March 2015. [Online]. Available: https://dipalm.wordpress.com/2015/03/05/tripod-method-supplement-en/. |
| [5] | M. DiPalma, "Cardan Reduction (novel LS/LL approach)," SpeedSolving.com, 1 March 2017. [Online]. Available: https://www.speedsolving.com/threads/cardan-reduction-novel-ls-ll-approach.64042/. |
| [6] | M. DiPalma, "[SIMPLE] LL Variant (Revamped 'Fish & Chips')," SpeedSolving.com, 10 August 2017. [Online]. Available: https://www.speedsolving.com/threads/simple-ll-variant-revamped-fish-chips.65978. |
| [7] | M. DiPalma, "ZZ and ZB Discussion," SpeedSolving.com, 30 July 2012. [Online]. Available: https://www.speedsolving.com/threads/zz-and-zb-discussion.20834/post-767013. |
| [8] | M. DiPalma, "ZZ and ZB Discussion," SpeedSolving.com, 30 July 2012. [Online]. Available: https://www.speedsolving.com/threads/zz-and-zb-discussion.20834/post-767137. |