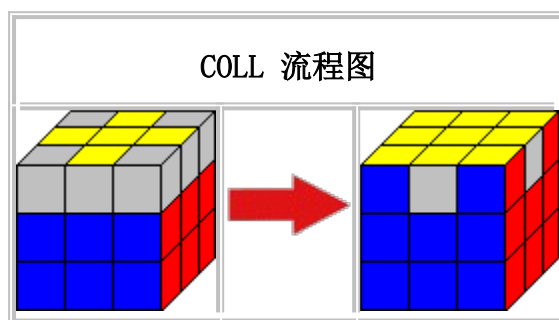
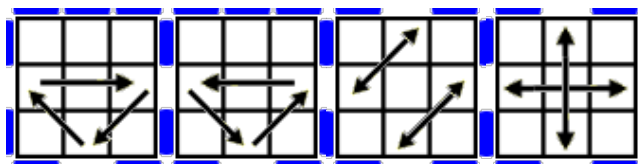


COLL

COLL 可以说是 OLL 的加强版，功用相当于「OLL + PLL 换角」，总共 40 个公式，但是有 12 个公式难以判断，并不太适合速解，通常只学习实用的 28 个公式。



COLL 能够同时解决 OLL 四个角块的翻面与 PLL 四个角块的位置，因此在使用 COLL 之后，会只剩下五个情况，第一个情况是顶层四个边块全都正确，跳过 PLL 的步骤，其余四个情况是边块未归位的 PLL，全是两段式 PLL 的换边公式。



当你已经将 CFOP 练得倒背如流后，再来才考虑 COLL 是否需要学习。否则，切勿尝试！如果你有意愿学习 COLL，请先拥有平均 25 秒内复原魔方的功力，之后再来接触 COLL，否则将会自找苦吃。

如何使用 COLL？在此，以 Pi 作为举例：

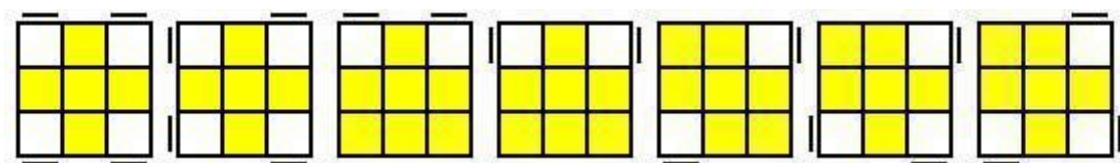
共两种颜色，左方两角同色，右方两角同色。

共两种颜色，左上角、右下角同色，左下角、右上角同色。

共三种颜色，右方两角同色，左上角、左下角异色。

代号只是为了表明颜色的分布情况，有几种颜色，是否同色 or 异色。

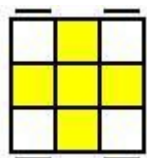
COLL 共有七种：



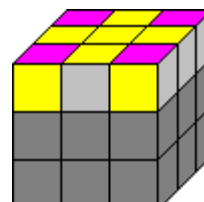
COLL 建议的学习顺序为 H & Pi →→→ U & T →→→ L→→→ S & As。但是 S 与 As 相当复杂，难以判断，不太适用于速解，所以大多数人并没有学习，若遇见这两个情况通常改用 OLL 的 026 与 027。

【H Case】

是 COLL 中最容易判断的 Case 之一。

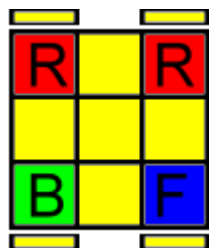


只从 U 面四角即可判断而出！



Codes	Pattern	Algorithm	Animation
H1		$F (R U R' U') (R U R' U') (R U R' U') F'$	 0/14f FRUR'URUR'URUR'UF'
H2		$(R U2') (R' U' R U R' U') (R U' R')$ 公式与 OLL21 相同	 0/11f RU2'R'URUR'URUR'

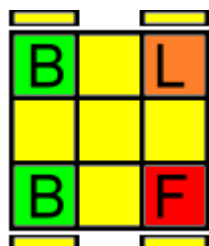
H3



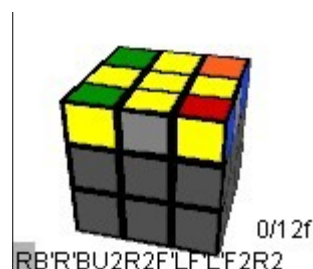
$R' U L U' R^2 U L' R' U^2 R U$
 R'



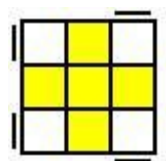
H4



$(R B' R' B) (U^2 R^2) (F' L F)$
 $L' F^2 R^2)$

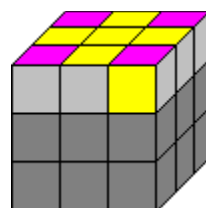


【Pi Case】



与H一样，同为 COLL 中最容易判断
的 Case 之一。

只从U面四角即可判断而出！



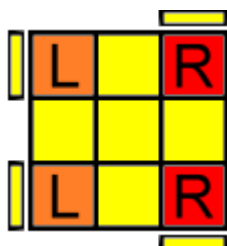
Codes

Pattern

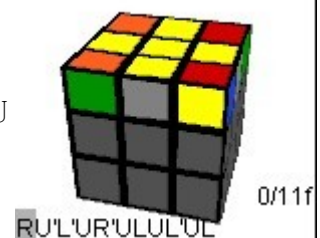
Algorithm

Animation

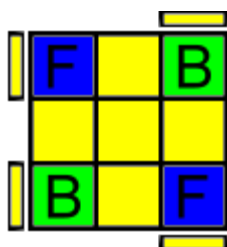
Pi1



$(R U' L' U) (R' U) (L U L' U)$
 $L)$



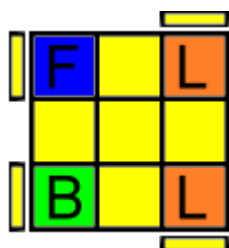
Pi2



$R B^2 U' B^2 U B^2 U R' L U^2 L'$



Pi3



$(R\ U2')\ (R2'\ U')\ (R2\ U')$

$(R2'\ U2\ R)$

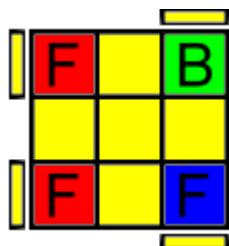
公式与 OLL22 相同



0/9f

$R\ U2'\ R2'\ U'\ R2'\ U2'\ R$

Pi4



$F\ (R2\ U')\ (R\ U'\ R\ U')\ (R'$

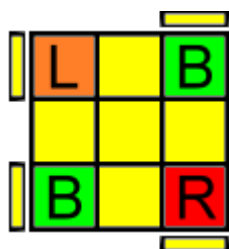
$U2)\ (R'\ U\ R2)\ F'$



0/13f

$F\ R2'\ U'\ R\ U'\ R\ U2'\ R'\ U\ R2'\ F'$

Pi5



$(R\ U2)\ (R'\ U'\ R\ U\ R'\ U2)\ (L'$

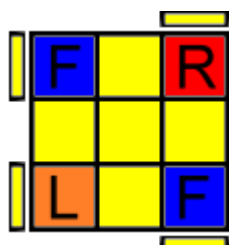
$U\ R\ U'\ L\ R')$



0/14f

$R\ U2'\ R\ U'\ R\ U2'\ L\ U\ R\ U'\ L\ R'$

Pi6



$(R'\ U2)\ (R\ U\ R'\ U'\ R\ U2)\ (L$

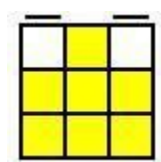
$U'\ R'\ U\ L'\ R)$



0/14f

$R'\ U2'\ R\ U'\ R\ U2'\ L\ U'\ R'\ U\ L'\ R$

【U Case】

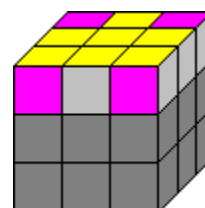


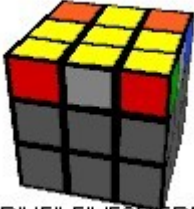
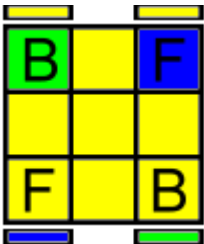
与 H、Pi 一样容易判断，

但稍微不同。

是观察 U 面两角与 F 面

的两角。

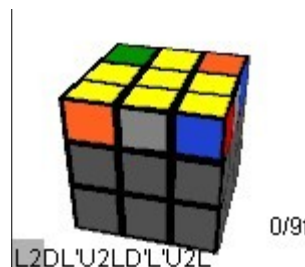


Codes	Pattern	Algorithm	Animation
U1		$(R\ U'\ R'\ U)\ (F'\ L\ F'\ L'\ F^2)$ $(R'\ F\ R\ F')$	 0/13f RU'R'UF'LF'LF'F2RFRF'
U2		$(R'\ U^2)\ (R\ F'\ R'\ F)\ U^2\ (F'\ R\ F)$	 0/10f R'U2RF'R'FU2F'RF
U3		$(R'\ U^2)\ (R\ F\ U')\ (R'\ U'\ R\ U\ F')$	 0/10f R'U2RFU'R'U'RU'F
U4		$(R'\ U'\ R\ U')\ (R'\ U^2)\ (R^2\ U\ R'\ U\ R\ U^2'\ R')$	 0/13f R'U'R'U'U2R2UR'URU2'R
U5		$(R^2\ D')\ (R\ U^2)\ (R'\ D)\ (R\ U^2\ R)$ 公式与OLL23相同	 0/9f R2D'RU2'R'DRU2'R

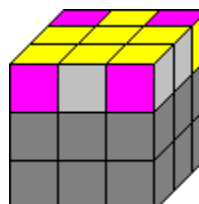
U6



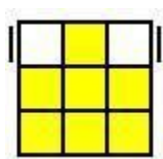
$(L^2 D) (L' U^2) (L D') (L' U^2 L')$



判断方法与 U 一模一样。



【T Case】



都是观察 U 面两角与 F 面的两角。

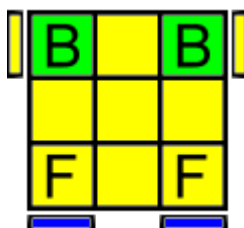
Codes

Pattern

Algorithm

Animation

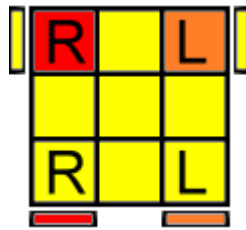
T1



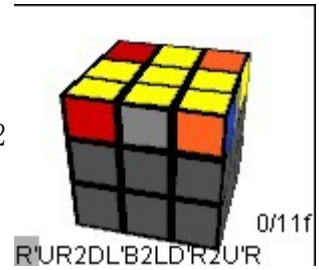
$(R U^2') (R' U' R U') (R^2 U^2)$
 $(R U R' U R)$



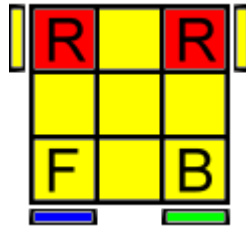
T2



$(R' U R^2) (D L' B^2 L D')$ $(R^2 U' R)$



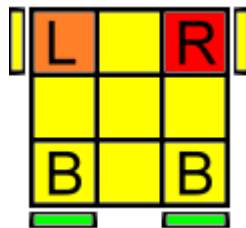
T3



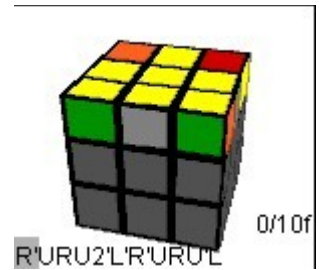
$(F U') (L' U R^2 U')$ $(L U)$
 $(R^2' F')$



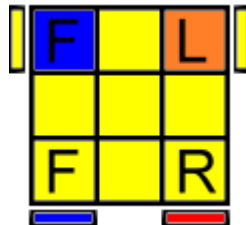
T4



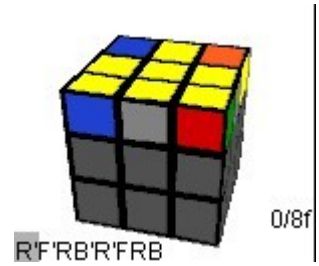
$(R' U R U^2)$ $(L' R' U R U' L)$



T5



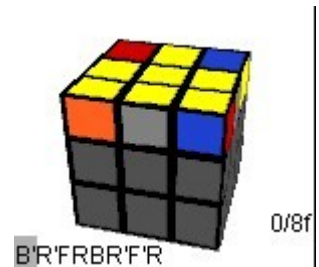
$(R' F' R B')$ $(R' F R B)$



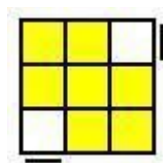
T6



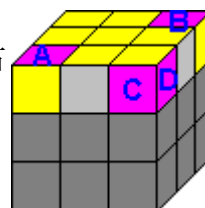
$(B' R' F R)$ $(B R' F' R)$



【L Case】



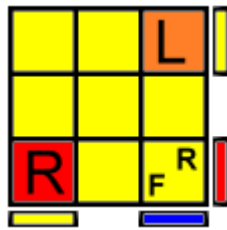
L 不容易判断。是观察顶面两角与右下方这一角。



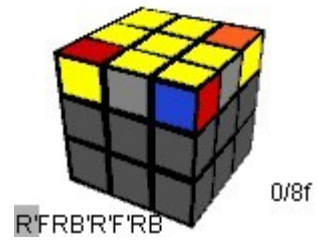
L1—L2 需要判断相对应的颜色：F 表示与 F 面同色、R 表示与 R 面同色等等。

Codes	Pattern	Algorithm	Animation
L1		$F' (R D^2 R' U^2) (R D^2 R' U^2)$ F	0/10f $F'RD^2R'U^2RD^2R'U^2F$
L2		$(R U^2' R D) (R' U^2 R D' R^2')$	0/9f $RU^2'RDR'U^2RD'R^2'$
L3		$(L B' D^2 B L') U^2 (L B' D^2 B L')$	0/11f $LB'D^2BL'U^2LB'D^2BL'$

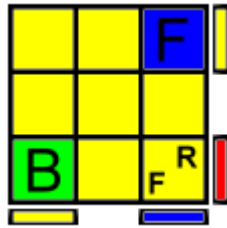
L4



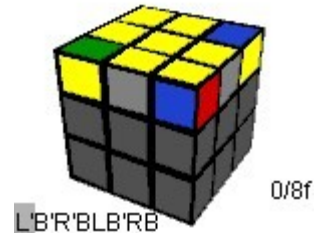
$(R' F R B') (R' F' R B)$



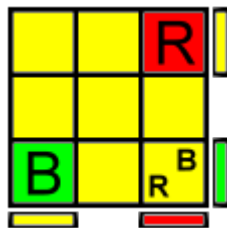
L5



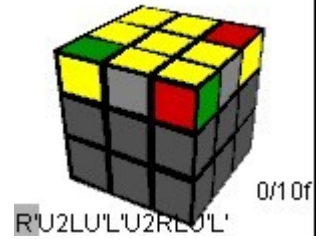
$(L' B' R' B) (L B' R B)$



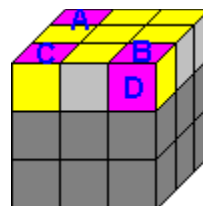
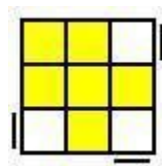
L6



$R' U2 L U' L' U2 R L U' L'$



【S Case】



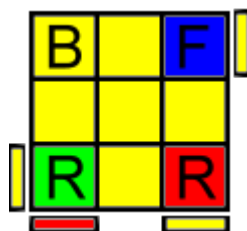
Codes

Pattern

Algorithm

Animation

S1



U R U R' U L' U R U' L U2 R'



S2



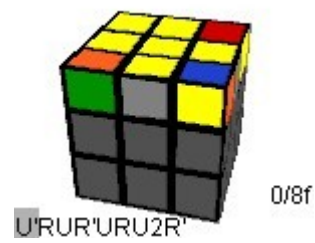
B' U' R U R' B U R U2 R'



S3



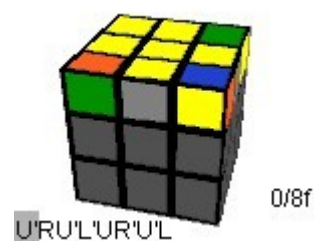
U' R U R' U R U2 R'



S4



U' R U' L' U R' U' L



S5

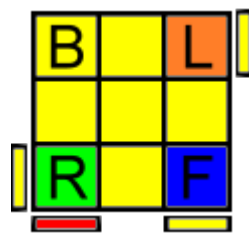


U R2 D' R U' R' D R U' R U

R' U R



S6



U R U R' U R2 D R' U2 R D'

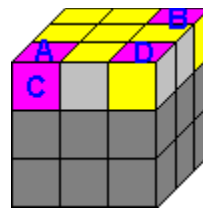
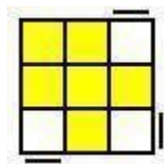
R2



0/12f

URUR'UR2DR'U2RD'R2

【As Case】



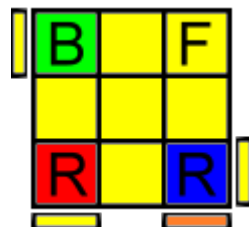
Codes

Pattern

Algorithm

Animation

As1



U R' U' R U' L U' R' U L' U2

R



0/12f

UR'UR'ULUR'ULU2R

As2



U R2 D R' U2 R D' R2 U' R U'

R'



0/12f

UR2DR'U2RD'R2UR'UR'

As3



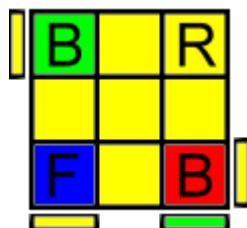
R U2 R' U' R U' R'



0/7f

RU2R'U'R'

As4



U L' U R U' L U R'



8/8f

UL'URU'LUR'

As5



R' U' R U' R' U R' D' R U R'

D R2



0/13f

R'U'R'UR'D'RUR'DR2

As6



U R U2 R' U2 L' U R U' R' L



0/11f

URU2R'U2L'URU'R'L