

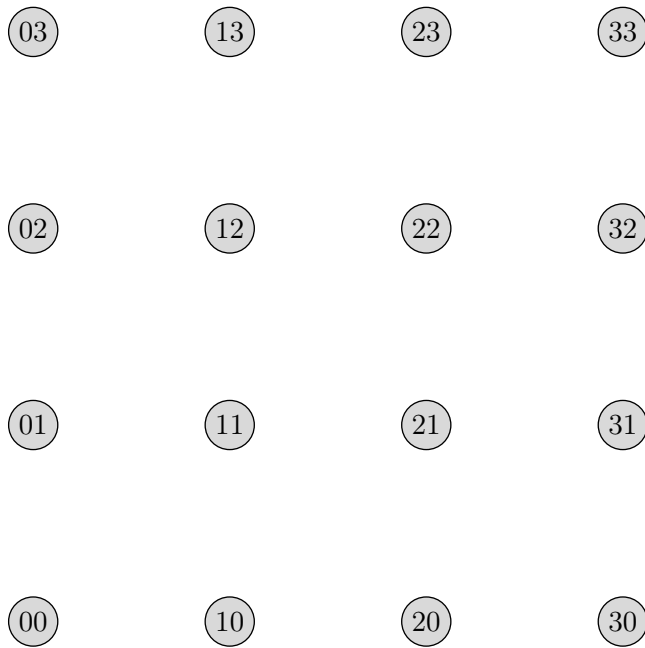
TicTacToe-automorphism pictures for 4×4 Π

Jonathan L.F. King

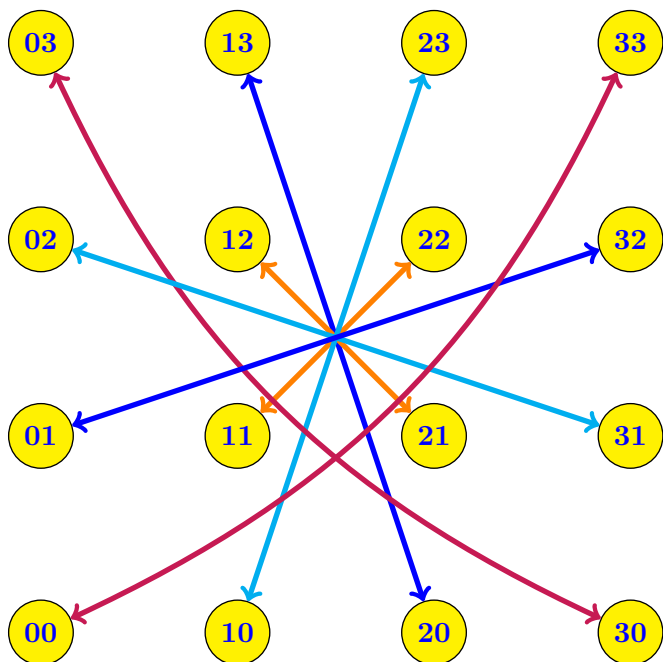
The building blocks are: “Flip” **F**, “Rotation” **R**, “Swizzle” **S**, “Traffic Light” **T**.

In two places, I’ve “accidentally” included equivalent [up to rotation/flip/inverse] diagrams.
The errors are marked by ⚡ ⚡ bolts.

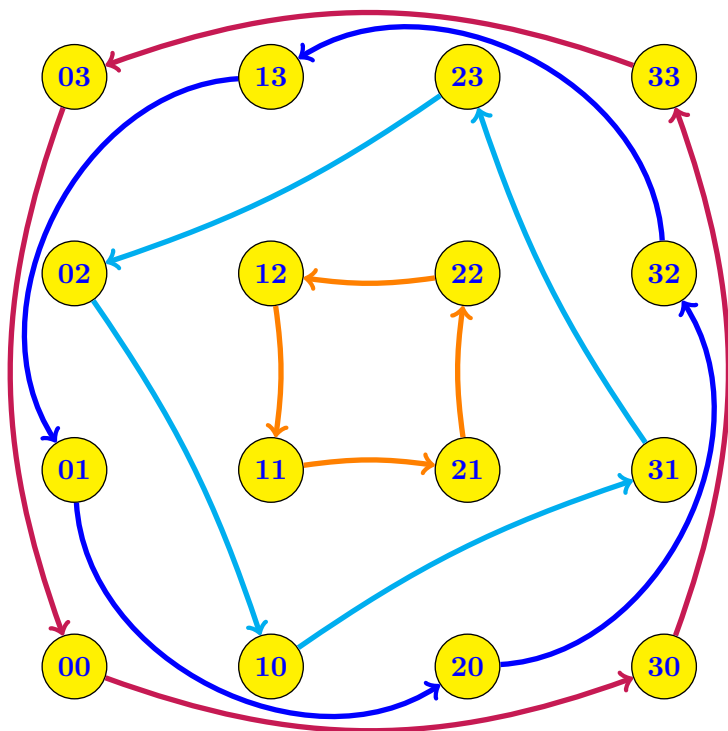
Id :



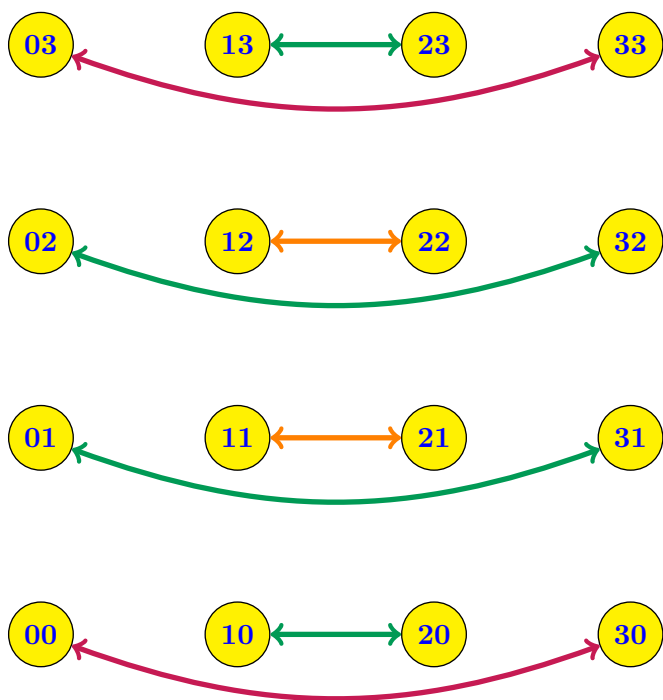
RR :



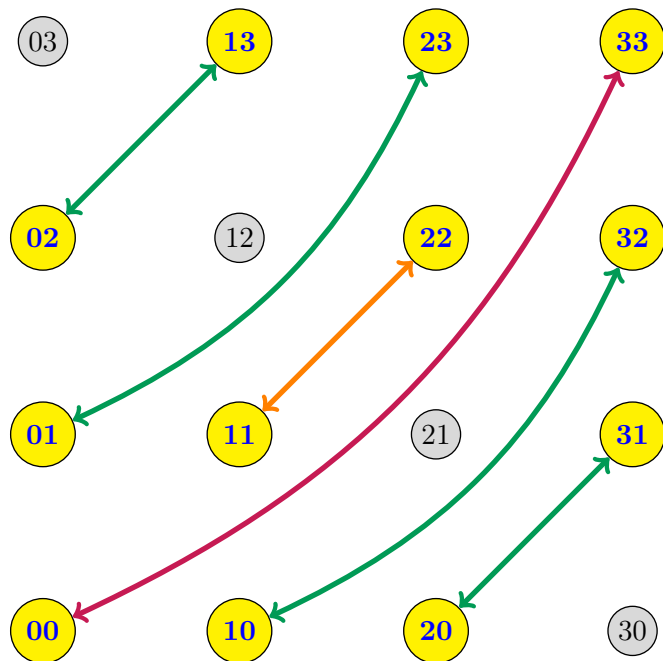
ROTATION
R conj-to/inverse-of RRR :



FLIP
F conj-to RRF :



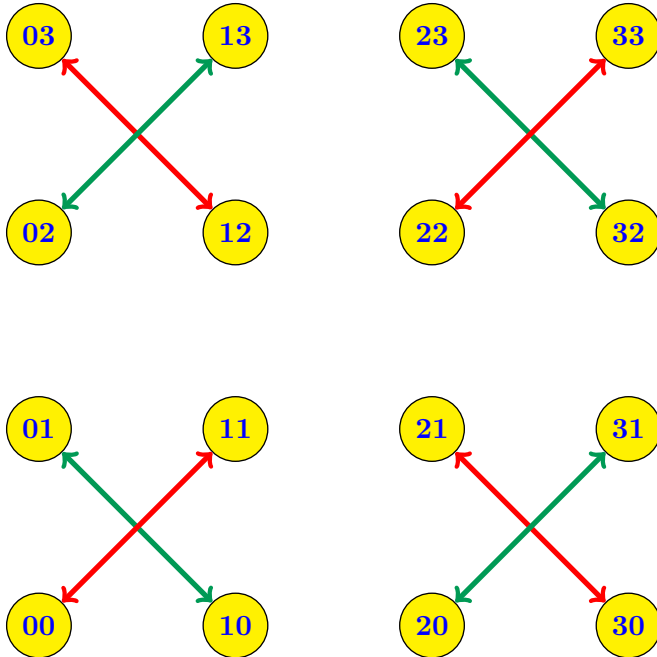
RF conj-to RRRF :



.....
 We now multiply [on the left] the 8 dihedral automorphisms by $\mathbf{S}$.

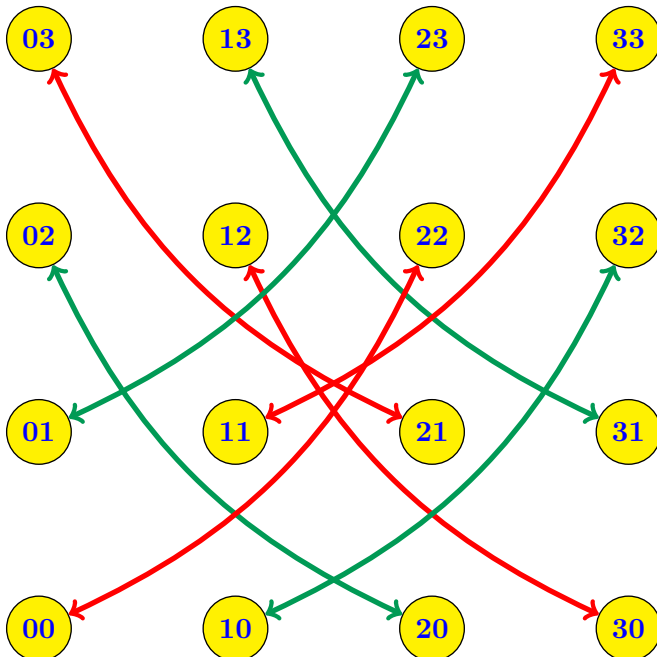
SWIZZLE

$\mathbf{S}$:

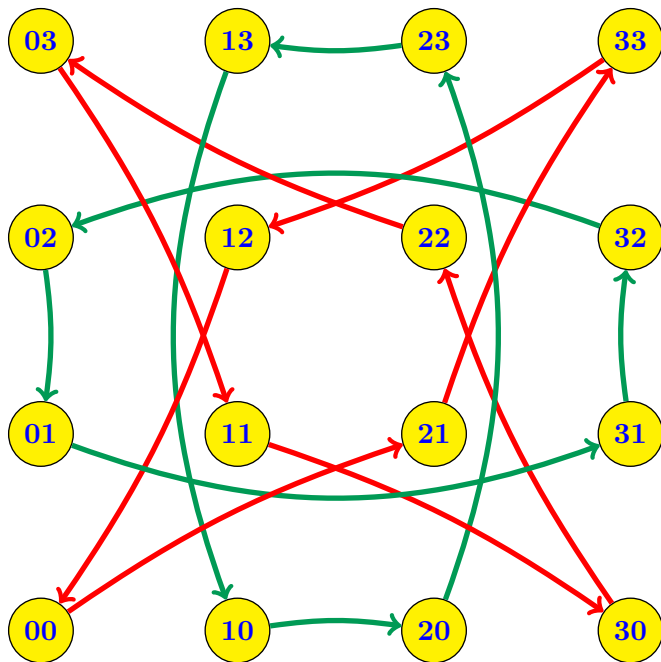


CURTAINS

$\mathbf{SRR}$:

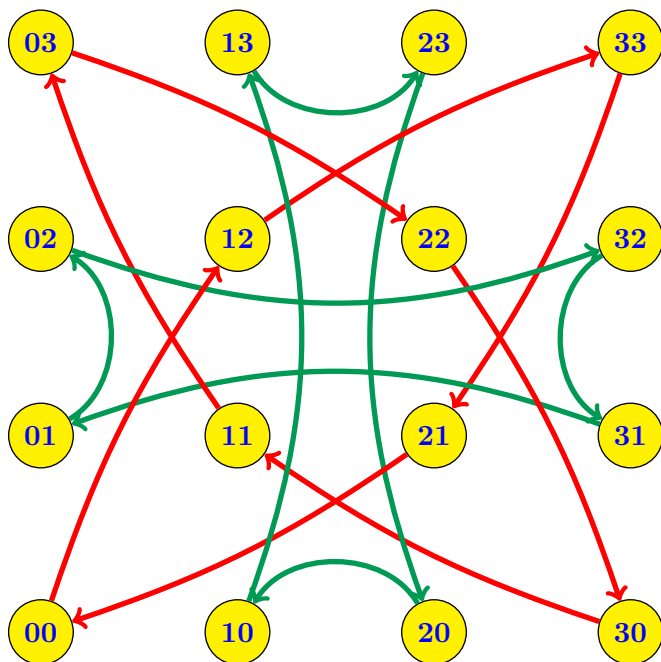


SR conj-to/inverse-of SRRR :



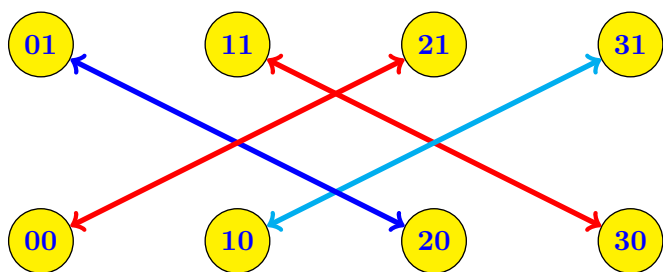
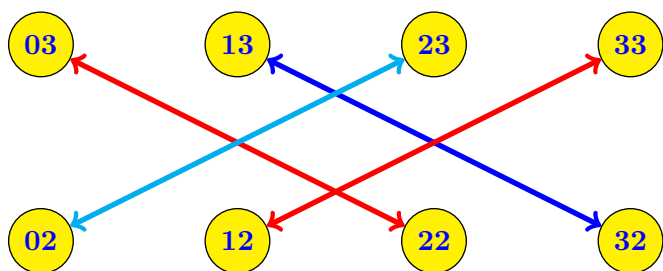
KNIGHTS TEMPLAR

⚡ ⚡ SRRR conj-to/inverse-of SR (Redundant) :



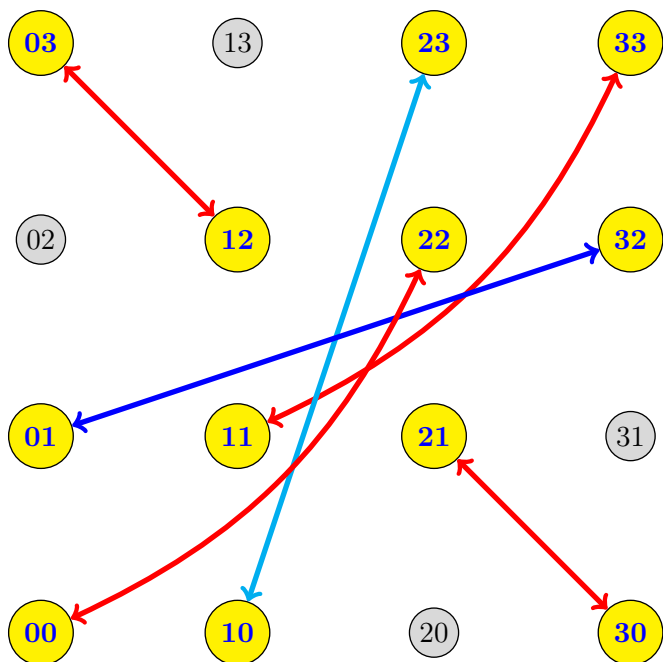
CONTRADICTIONS

SF conj-to SRRF :



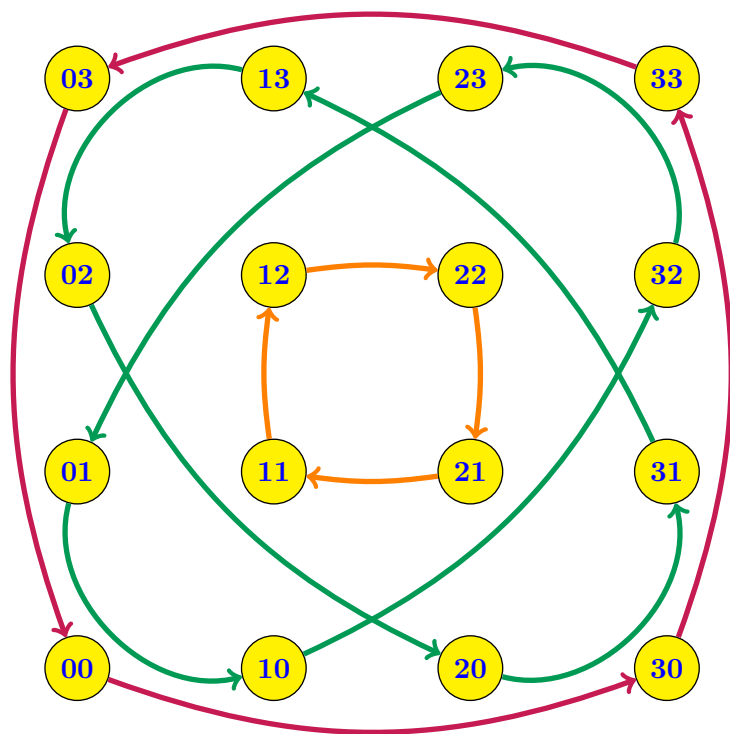
EXCALIBUR

SRF conj-to SRRRF :



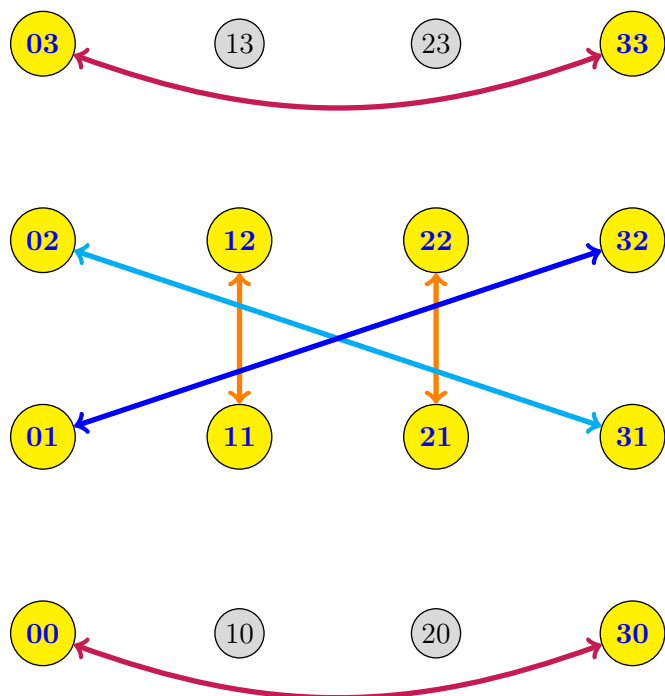
ELECTRON ORBITALS

TR conj-to/inverse-of TRRR :

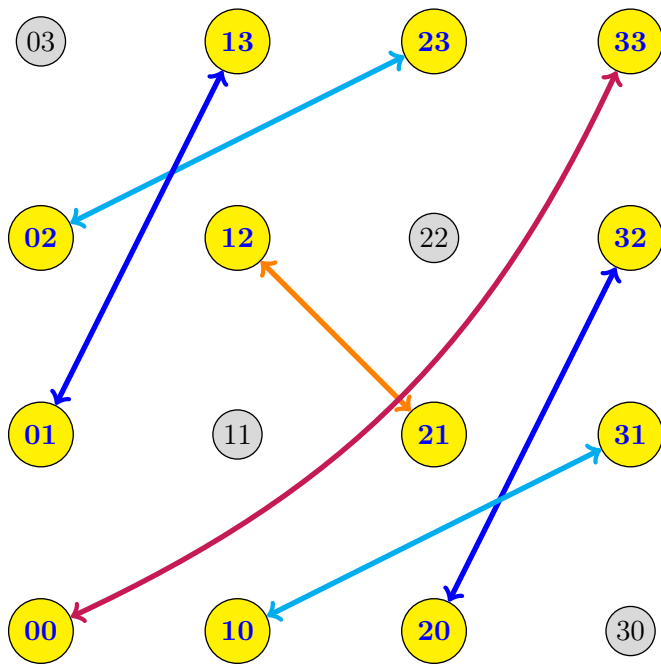


CHESHIRE CAT

TF conj-to TRRF :

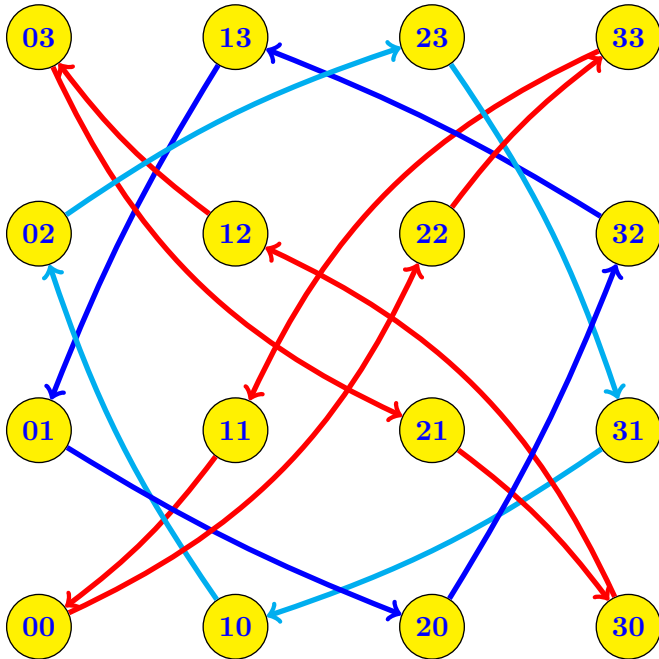


SATELLITE DISH
TRF conj-to TRRRF :



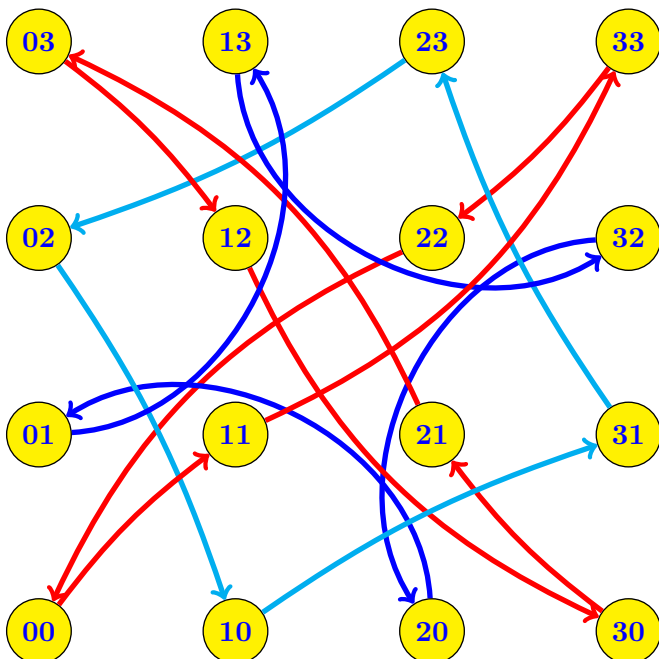
.....
 We now multiply [on the left] the 8 dihedral automorphisms by TS.

TS inverse-of TSRR :

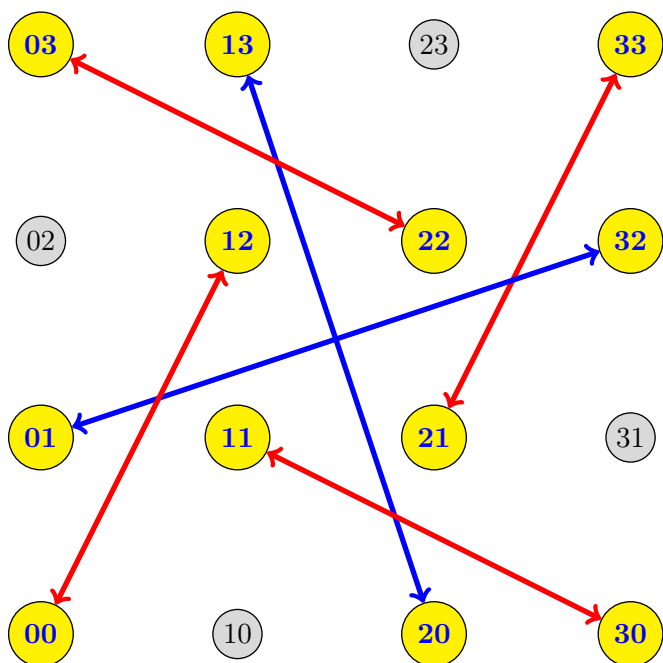


FINDING A PARKING SPOT

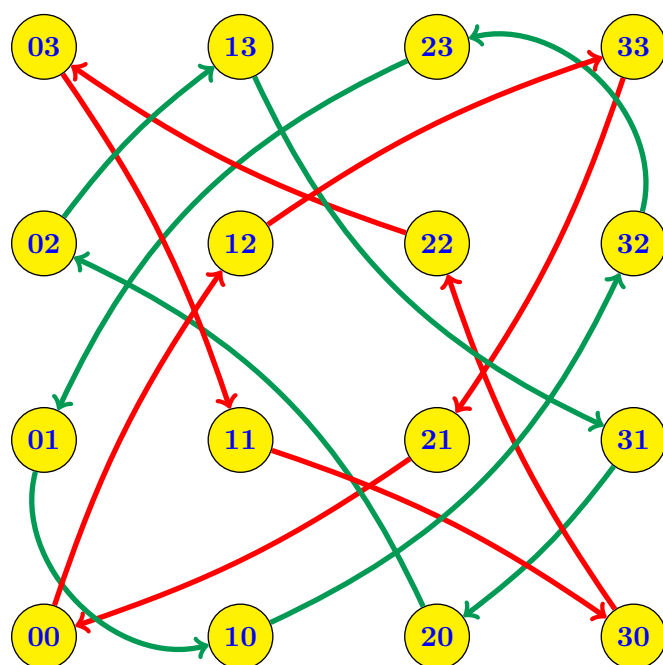
⚡⚡ TSRR inverse-of TS (Redundant) :



TWISTER
TSR conj-to TSRRRF :

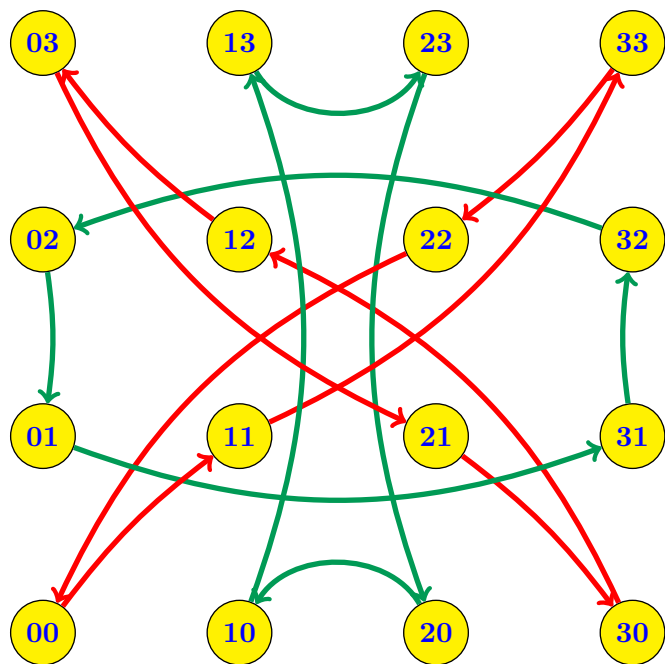


TELSTAR
TSF conj-to/inverse-of TSRRF :



ZURG

TSRF conj-to/inverse-of TSRRRF :



.....
 Tha-tha-tha-That's All, Folks!
