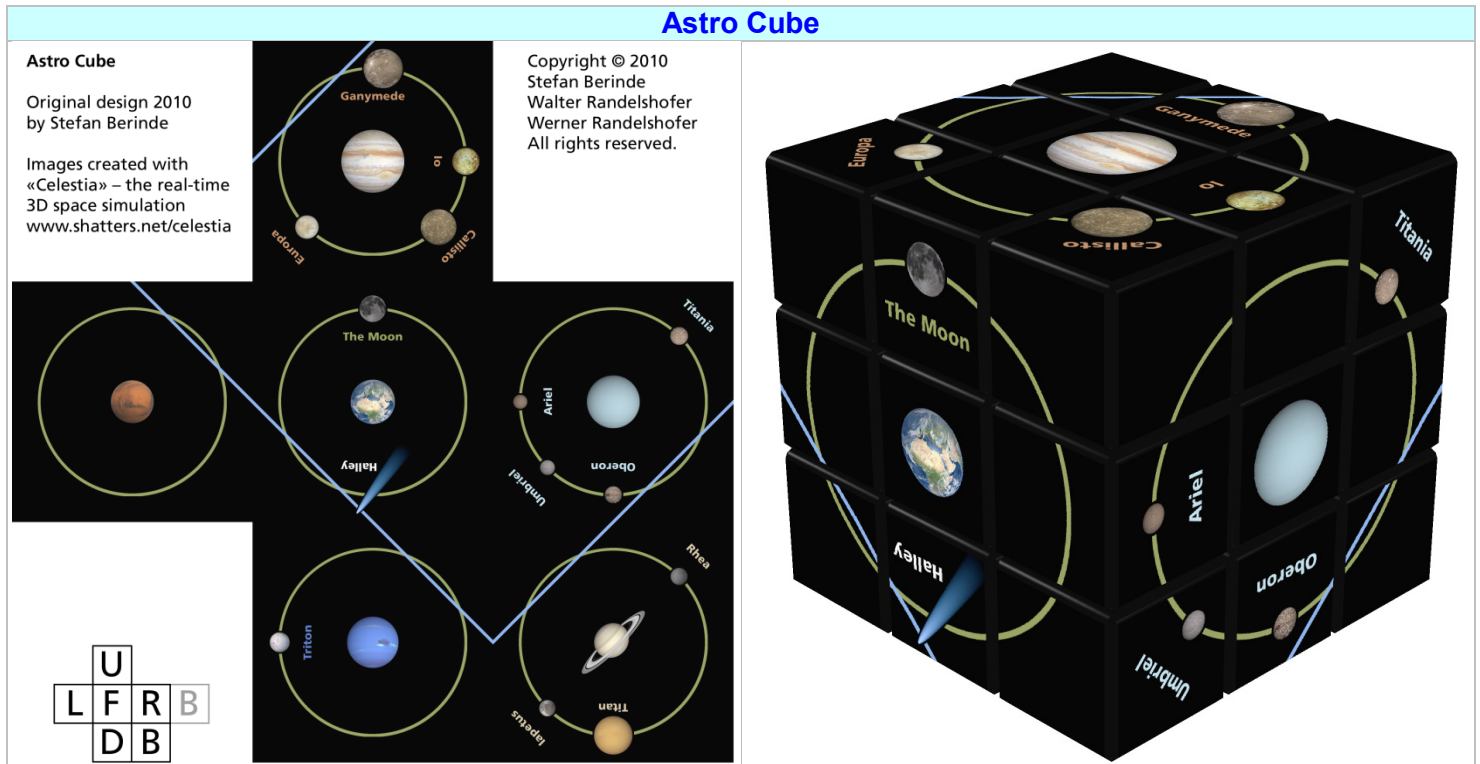


Astro Cube Mapping

Introduction

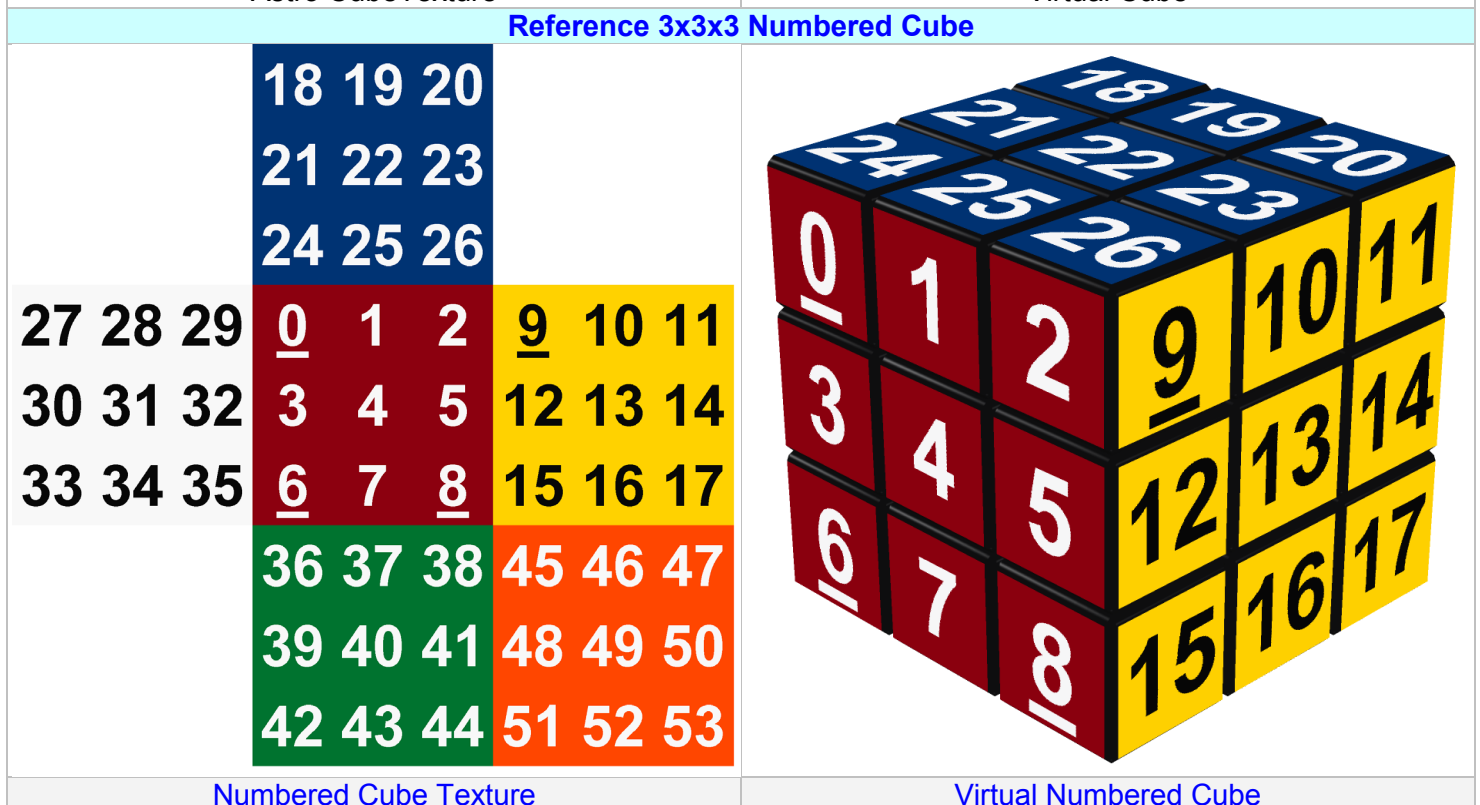
In the mapping process of the Astro Cube cube texture, stickers are numbered from 0 to 53, following the numbering scheme of a reference 3x3x3 numbered cube. Alternately, stickers can also be marked with a letter followed by a number representing the orbit the pieces move in. By doing so, each cube sticker can be uniquely identified. The mapping process is used to find short algorithms that will move stickers to and from selected positions, using the on-line JavaScript version of [Algorithm Picker](#).

Using these algorithms to visit each of the 6 cube faces in a row, the Astro Cube can then be animated to show how Comet Halley revolves around its orbit.



Astro CubeTexture

Virtual Cube



Numbered Cube Texture

Virtual Numbered Cube

Edge Mapping

3x3x3 Cube – Edge Mapping – Numbered Cube & Orbit Cube														
Numbered Cube									Orbit Cube					
			19									G		
			21		23							F		H
				25								E		
	28			1			10			N		D		I
30		32	3		5	12		14	M		O	C		A
	34			7			16			P		B		K
				37			46					R		W
			39		41	48		50				Q		S
				43			52					T		V
														U

Algorithms

Astro Cube – Edge Mapping – Movable Edge Stickers											
Numbered Cube						Orbit Cube					
			21					F			
	28						N				
30		32	3		14	M		O	C		J
				7					B		
				37					R		
					48					V	X
					50						

Edge Mapping – From Numbered Cube to Orbit Cube											
Numbered Cube	3	7	14	21	28	30	32	37	48	50	
Orbit Cube	C	B	J	F	N	M	O	R	V	X	

Algorithms – Face R (URANUS) – Three-Cycles of Mides – Orbit 12			
Numbered Cube	Orbit Cube	Algorithm	Moves
(7 14 21)	(B J F)	SR D R' MU R D' R' MU' L	9
(7 14 28)	(B J N)	B' MR' B' L' B MR B' L B2	9

Algorithms – Face U (JUPITER) – Three-Cycles of Mides – Orbit 12			
Numbered Cube	Orbit Cube	Algorithm	Moves
(7 21 14)	(B F J)	L' MU R D R' MU' R D' SR'	9
(7 21 48)	(B F V)	U' MR U' R' U MR' U' R U2	9

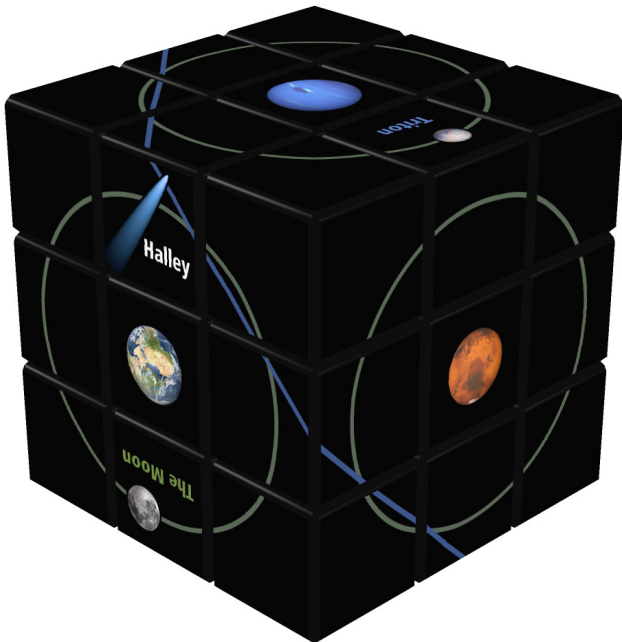
Algorithms – Face L (MARS) – Three-Cycles of Mides – Orbit 12			
Numbered Cube	Orbit Cube	Algorithm	Moves
(7 28 14)	(B N J)	B2 L' B MR' B' L B MR B	9
(7 28 48)	(B N V)	R' MF R' F' R MF' R' F R2	9

Algorithms – Face D (NEPTUNE) – Midge Flips – Orbit 12			
Numbered Cube	Orbit Cube	Algorithm	Moves
(7 37) (3 32)	(B R) (C O)	D L MF L' D F' L D' MF' D L' F D2	13
(7 37) (14 48)	(B R) (J V)	F' MU F R' D F' R MU' R' F D' R	12
(7 37) (21 28)	(B R) (F N)	U' MR U F' L U' F MR' F' U L' F	12
(7 37) (30 50)	(B R) (M X)	F MU' F' L D' F L' MU L F' D L'	12

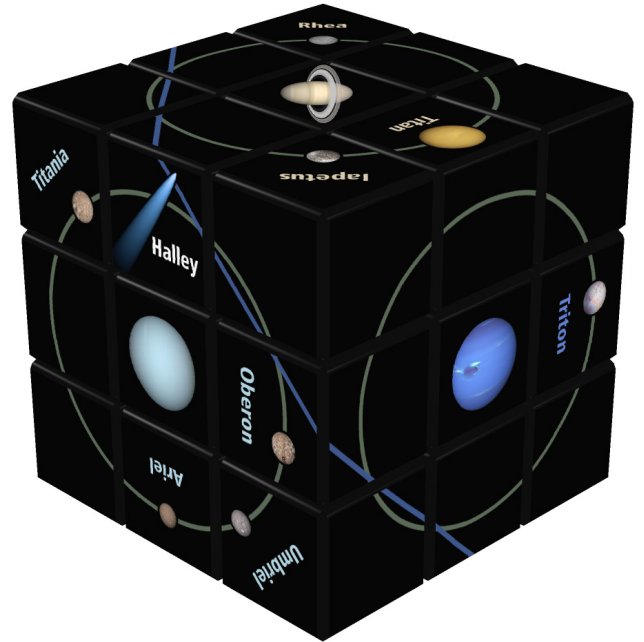
Algorithms – Face B (SATURN) – Three-Cycles of Mides – Orbit 12			
Numbered Cube	Orbit Cube	Algorithm	Moves
(7 48 21)	(B V F)	U2 R' U MR U' R U MR' U	9
(7 48 28)	(B V N)	R2 F' R MF R' F R MF' R	9

Any of the algorithms listed above will bring Comet Halley to a specified cube face, without messing up the rest of the cube. For example, algorithm U' MR U' R' U MR' U' R U2 will bring the comet to the JUPITER face.

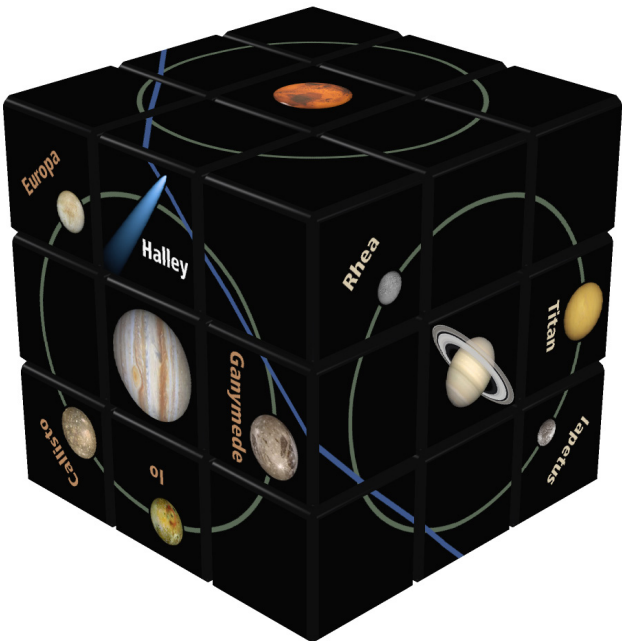
Comet Halley – Algorithms



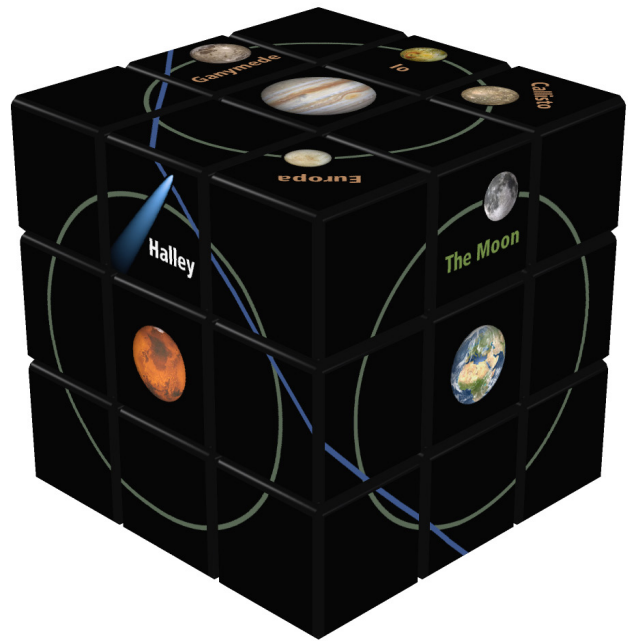
EARTH: CF2



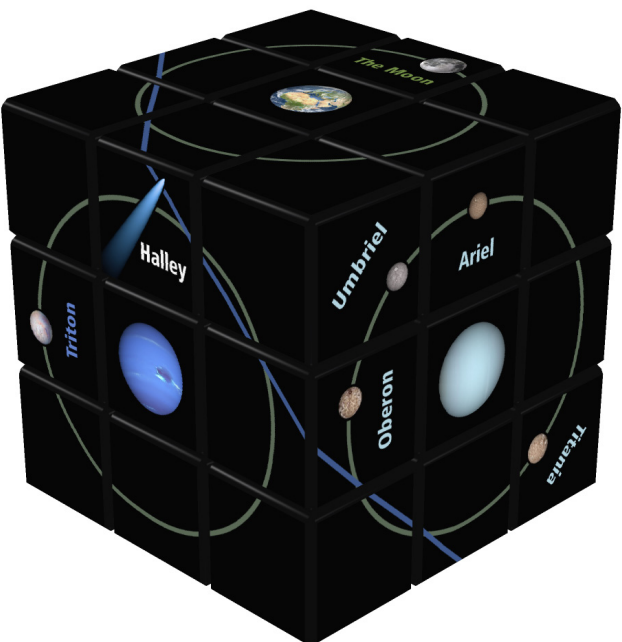
URANUS: B' MR' B' L' B MR B' L B2 CU CF'



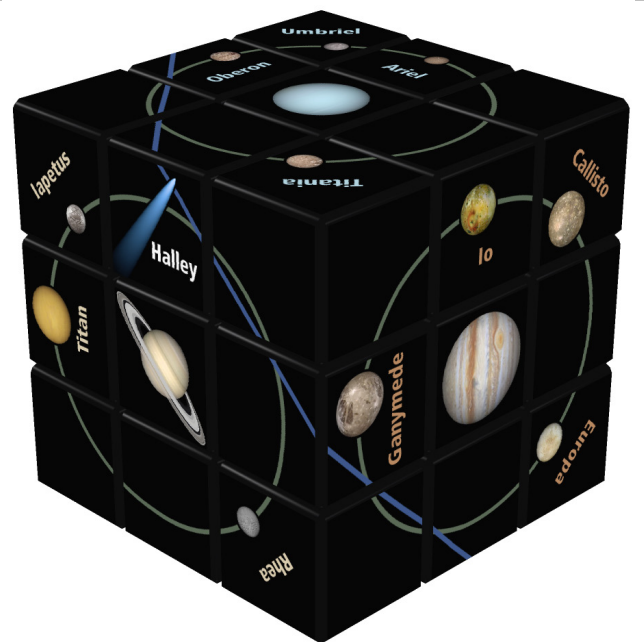
JUPITER: U' MR U' R' U MR' U' R U2 CR' CF



MARS: R' MF R' F' R MF' R' F R2 CU'



NEPTUNE: U' MR U F' L U' F MR' F' U L' F CR



SATURN: R2 F' R MF R' F R MF' R CU2 CF