

Analysing whole set of Conjunction Scenarios for a Single day

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Summary

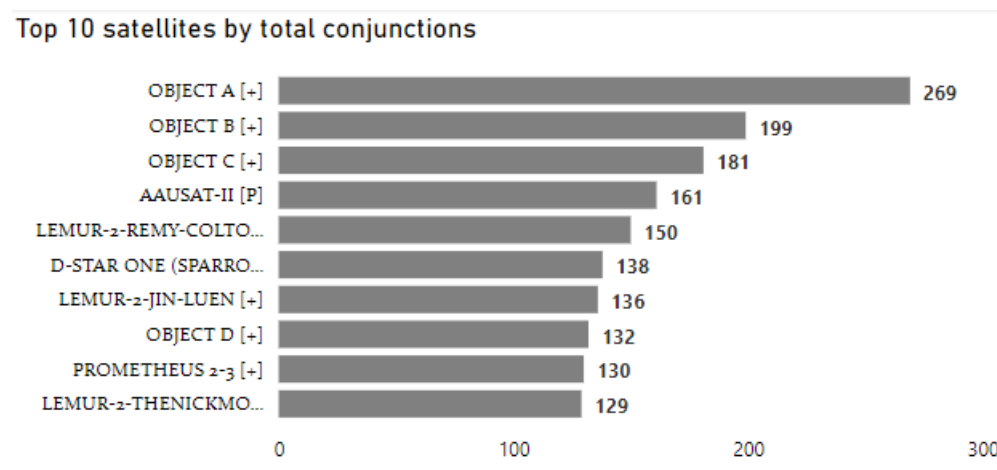
Background

Conjunctions in space occur when two or more Residential Space Objects in the Earth's orbit pass dangerously close to one another, resulting in possible collision scenarios. With the rapid increase in the number of RSO's in recent times, the number of predicted conjunctions has significantly increased. This report is the analysis of whole set of conjunctions of a single day.

Key Findings

- There is a total of **269** conjunctions made by **Object A** [+] and around **199** by **Object B** [+] and this is the highest number in a single day
- Most number of conjunctions (**93** times) happen between **KSF3-C** [+] and **FLOCKY 4Y-29** [+]
- First conjunction happened at TCA **00:00.0** were between **LEMUR-2-JIN-LUEN** [+] and **STARLINK-30174** [+]
- Min range of conjunction was **0.03** between **SL-3 R/B** [-] and **STARLINK 3743** [+]
- Max relative speed in the conjunction were seen between **OBJECT B** [+] and **SL-12 R/B (AUX MOTOR)** [-] with a speed of **16.93** and range of **3.84**
- Max probability is **0.0318** in the conjunction between **STARLINK-5421** [+] and **FENGYUN 1C DEB** [-] with speed **8.206** and TCA range **0.032**

Top 10 satellites by total conjunctions



Most Number of Occurrences



OBJECT_NAME_1	OBJECT_NAME_2	OCCURENCES
KSF3-C [+]	FLOCK 4Y-29 [+]	93
O3B FM13 [+]	O3B FM19 [+]	70
OBJECT A [+]	OBJECT C [+]	61
SEEDS II (CO-66) [+]	STARLINK-5911 [+]	58
GHGSAT-C4 [+]	VELOX-AM [+]	49
OBJECT B [+]	OBJECT D [+]	46
GONETS-M 19 [+]	COSMOS 1087 [?]	40
AAUSAT-II [P]	STARLINK-2615 [+]	39
GLOBALSTAR M083 [+]	COSMOS 1691 [?]	39
LEMUR-2-REMY-COLTON [+]	STARLINK-4797 [+]	34

Top conjunctions with max relative speed

OBJECT_NAME_1	OBJECT_NAME_2	TCA_RELATIVE_SPEED	TCA_RANGE
OBJECT B [+]	SL-12 R/B(AUX MOTOR) [-]	16.93	3.84
ELYSIUM STAR 2 & LFF [+]	SL-12 R/B(AUX MOTOR) [-]	16.86	2.01
OBJECT F [+]	SL-12 DEB [-]	16.62	4.64
SJ-11-03 [+]	SL-12 R/B(AUX MOTOR) [-]	16.60	2.92
SAUDICOMSAT 3 [+]	SL-6 R/B(2) [-]	16.56	3.86
TIANQI-8 [+]	SL-12 R/B(AUX MOTOR) [-]	16.49	4.65
TUBIN [+]	BREEZE-M DEB [-]	16.27	3.58
YAM-3 [+]	BREEZE-M DEB [-]	16.27	4.49
STARLINK-1111 [+]	DELTA 1 DEB [-]	16.13	4.25
STARLINK-4345 [+]	BREEZE-M DEB [-]	16.04	1.60
OBJECT H [+]	FAST [-]	16.02	3.84
FOSSASA-2E16 [+]	BREEZE-M DEB [-]	15.99	2.32
FLOCK 4Y-2 [+]	USA 40 R/B DEB [-]	15.94	3.04
NEMO-HD [+]	USA 40 R/B DEB [-]	15.93	0.52
FLOCK 4V-25 [+]	FAST [-]	15.92	1.45
JILIN-1 GAOFEN 3F [+]	WESTFORD NEEDLES [-]	15.92	3.02
ZHUHAI-1 OHS-03 [+]	SL-14 R/B [-]	15.86	4.83
ZHUHAI-1 OVS-02 [+]	SL-14 R/B [-]	15.83	2.36
DMSAT-1 [+]	BREEZE-M DEB [-]	15.83	1.70
FLOCK 4S-7 [+]	SL-14 R/B [-]	15.80	2.02

First 25 conjunctions

OBJECT_NAME_1	OBJECT_NAME_2	TCA ▲
LEMUR-2-JIN-LUEN [+]	STARLINK-30174 [+]	00:00.0
STARLINK-30468 [+]	KSLV-II R/B [-]	00:00.1
PAYLOAD B [+]	CZ-4 DEB [-]	00:00.4
STARLINK-4397 [+]	PEGASUS DEB [-]	00:00.4
NUSAT-32 (ALBANIA-1) [+]	NORSAT-TD [+]	00:00.5
YAOGAN-30 H [+]	UNKNOWN [-]	00:00.5
CARTOSAT-2B [+]	CZ-3B DEB [-]	00:00.6
GLOBALSTAR M083 [+]	COSMOS 1691 [?]	00:00.6
SPACEBEE-7 [+]	STARLINK-6226 [+]	00:00.6
STARLINK-30394 [+]	FENGYUN 1C DEB [-]	00:00.6
STARLINK-4013 [+]	DELTA 1 DEB [-]	00:00.7
ONEWEB-0501 [+]	METEOR 3-1 [?]	00:00.8
KANOPUS-V 4 [+]	FOSSASA-2E15 [+]	00:00.9
STARLINK-4728 [+]	HORS 1 [+]	00:01.0
STARLINK-5365 [+]	CUBESX-HSE 3 (RS42S) [+]	00:01.0
YUNHAI 1-02 [+]	FENGYUN 1C DEB [-]	00:01.1
CLOUDSAT [+]	FENGYUN 1C DEB [-]	00:01.2
LEMUR-2-JIN-LUEN [+]	STARLINK-3263 [+]	00:01.3
STARLINK-4597 [+]	SNIPE 2 [+]	00:01.3
ZHUHAI-1 OVS-02 [+]	OBJECT C [+]	00:01.3
FLOCK 4Y-8 [+]	STARLINK-30321 [+]	00:01.5
ONEWEB-0090 [+]	SL-14 DEB [-]	00:01.5
AAUSAT-II [P]	STARLINK-2458 [+]	00:01.7
GRUS-1D [+]	PSLV DEB [-]	00:01.7
IRIDIUM 140 [+]	METEOR 2-6 DEB [-]	00:01.7

Top 25 conjunctions with min range   ...

OBJECT_NAME_1	OBJECT_NAME_2	TCA_RANGE
SL-3 R/B [-]	STARLINK-3743 [+]	0.03
FENGYUN 1C DEB [-]	STARLINK-5421 [+]	0.03
CONNECTA T2.1 [+]	TRISAT [+]	0.04
YUNHAI 1-02 DEB [-]	STARLINK-5048 [+]	0.04
CZ-4B R/B [-]	LANDSAT 8 [+]	0.05
STARLING 4 [+]	STARLINK-5920 [+]	0.05
ICEYE-X20 [+]	GHGSAT-C1 [+]	0.06
STARLINK-4110 [+]	LEMUR-2-THENICKMOLO [+]	0.06
FLOCK 1C-8 [-]	OBJECT W [+]	0.07
OBJECT BS [-]	STARLINK-6133 [+]	0.07
STARLINK-1194 [+]	SHIYAN 1 (SY-1) [+]	0.07
OBJECT AL [+]	STARLINK-4664 [+]	0.08
STARLINK-2715 [-]	STARLINK-3954 [+]	0.08
RAPIDEYE 1 [-]	STARLINK-5932 [+]	0.08
CZ-2D DEB [-]	OBJECT AB [+]	0.09
YAOGAN-39 02C [+]	YAOGAN-39 02A [+]	0.09
CZ-2D DEB [-]	STARLINK-4493 [+]	0.10
H-2A DEB [-]	STARLINK-6116 [+]	0.10
COSMOS 2251 DEB [-]	IRIDIUM 175 [+]	0.10
SL-14 R/B [-]	ASTROCAST-0103 [+]	0.10
OBJECT F [-]	STARLINK-5054 [+]	0.10
H-2A R/B [-]	OBJECT A [+]	0.10
STARLINK-4466 [+]	XIAOXIANG 1-07 [+]	0.10
OBJECT C [+]	STARLINK-4028 [+]	0.11
STARLINK-2025 [P]	STARLINK-1961 [+]	0.11