Team 9
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- Optimal control problem
  - maximum principle
- Boundary value problem
  - shooting method
- System of nonlinear algebraic equations
- $\alpha$ - the angle between the thrust vector and the SC velocity vector
- $\theta_a, \theta_\pi$ - limits of instant true anomaly
  \[ |\theta| \leq \theta_\pi, \ |\theta| \geq \theta_a \]
- $T_0, T_1$ – the start time and the finish time
Impulse parameters

$\beta, \gamma$ - the angles which define direction of an initial impulse

$\Delta V = 2.5 \text{ km/s}$
Conditions

\[ \vec{R}_{SC}(T_1) = \vec{R}_{AS}(T_1) \]

\[ \min R_{SC} = 0,2 AU \]

Parameters to meet the conditions:

\[ \alpha, \beta, \gamma, T_1 \]
parameters value

\[
\begin{align*}
\alpha &= 2.8110 \\
\beta &= 0.1106 \\
\gamma &= -0.0410 \\
\theta_a &= 2.8349 \\
\theta_{\pi} &= 1.2993 \\
T_0 &= 7038 \text{ MJD} \\
T_1 - T_0 &= 10323.3 \text{ D}
\end{align*}
\]
Trajectory projection to Sxy - plane

$J = 351152$
Trajectory projection to Sxz - plane
Trajectory projection to Syz - plane
Main publications
(in “Cosmic Research”)

- **K.G. Grigoriev, M.P. Zapletin and D.A. Silaev**

- **K.G. Grigoriev, E.V. Zapletina and M.P. Zapletin**

- **K.G. Grigoriev and I.S. Grigoriev**

- **K.G. Grigoriev and M.P. Zapletin**

- **K.G. Grigoriev and I.S. Grigoriev**

- **K.G. Grigoriev and I.S. Grigoriev**