ROCKET-SPACE DEVICE ENGINEERING AND INFORMATION SYSTEMS
2024, Vol. 11, Iss. 3, pp. 91–103

UDC 629.7.054.07 EDN INRFOW

Analysis of the Optimal Design of the Shock Absorption System for a Strapdown Measuring Unit Using a Modified Particle Swarm Method

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Abstract. In this paper we continue the investigation of the optimal variants of amortization and dampening system of a strapdown inertial measurement unit based on vibrational-string accelerometers. The report provides the results of investigations carried out earlier and makes a conclusion that it is impossible to solve the emerging multicriterion optimization problem directly. We describe a way to increase the performance of the Python script when using multiprocessor computing. The applied characteristics and the results of the particle swarm optimization algorithm modification are provided.
Keywords: inertial measurement unit, strapdown inertial measurement system, amortization and dampening system, multicriterion optimization, particle swarm optimization
For citation: Ilyushin P.A., Naumchenko V.P., Pikunov D.G. Analysis of the Optimal Design of the Shock Absorption System for a Strapdown Measuring Unit Using a Modified Particle Swarm Method. *Rocket-Space Device Engineering and Information Systems.* 2024. Vol. 11. No. 3. pp. 91–103. (in Russian)

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Received ***06.05.2024***
Accepted ***21.08.2024***