
ANALYSIS OF EXPERIMENTAL INVESTIGATION TECHNIQUES FOR THE CASE OF VELOCITY MEASUREMENT ON A BALLISTIC TRACK

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Abstract

The study deals with the specifics of experimental investigation techniques for measuring velocities on a ballistic track. We studied existing methods of estimating velocities. We analysed the main assumptions and tested these methods at various initial parameters and for various flight conditions. The investigations conducted allowed us to develop a collection of recommendations for carrying out experiments on a ballistic track.

Keywords

Velocity estimation techniques, ballistic track, determining the drag coefficient experimentally

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References

- [1] Kol'tsov Yu.F. Kratkie svedeniya o metodakh izmereniya skorosti dvizheniya snaryadov i pul' na traektorii [Summary in methods of velocity measurement of missiles and bullets on their trajectory]. Moscow, 1959, 25 p.
 - [2] Emel'yanova N.S. Software for experimental research on ballistic track. *Molodezhnyy nauchno-tekhnicheskiiy vestnik*, 2014, no. 6. Available at: <http://sntbul.bmstu.ru/doc/723443.html>.
 - [3] Ilyukhin S.N. Drag coefficient evaluation technique in process of experimental research on a ballistic track. *Molodezhnyy nauchno-tekhnicheskiiy vestnik*, 2014, no. 1. Available at: <http://sntbul.bmstu.ru/doc/704437.html>.
 - [4] Ilyukhin S.N., Moskalenko V.O., Khlupnov A.I. Experimentally studied influence of the bullet head shape on dispersion characteristics at subsonic airspeeds. *Aerokosmicheskiiy nauchnyy zhurnal*, 2015, no. 5, pp. 38–48. Available at: <http://aerospjournal.ru/doc/819074.html>.
 - [5] Zlatin N.A., Krasil'shchikov A.P., Mishin G.I., Popov N.N. Ballisticheskie ustanovki i ikh primenenie v eksperimental'nykh issledovaniyakh [Ballistic installation and its use in experimental research]. Moscow, Nauka publ., 1974, 344 p.
 - [6] Kol'tsov Yu.F. Opreделение koeffitsienta lobovogo soprotivleniya strel'boy na ballisticheskoy trasse [Drag coefficient evaluation by means of shooting at the ballistic track]. Moscow, Bauman Press, 1964, 28 p.
 - [7] Dmitrievskiy A.A., Lysenko L.N. Vneshnyaya ballistika [Exterior ballistic]. Moscow, Mashinostroenie publ., 2005, 608 p.
 - [8] Kononov A.A., Nikolaev Yu.V. Vneshnyaya ballistika [Exterior ballistic]. Moscow, TsNII informatsii publ., 1979, 228 p.
 - [9] Ilyukhin S.N., Kazakovtsev V.P., Koryanov V.V. Ballistic analysis of capability to parry the wind load at initial flight path of promising aircrafts. *Nauka i obrazovanie. MGTU im. N.E. Baumana* [Science and Education. BMSTU]. 2015, no. 11, pp. 193–203. Available at: <http://technomag.bmstu.ru/doc/825899.html> (accessed 15 May 2017).
 - [10] Kazakovtsev V.P., Zhileykin V.D. Obrabotka strel'b [Shooting processing]. Moscow, Bauman Press, 2009. 24 p.
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- [11] Grabin V.V., Ilyukhin S.N., Klishin A.N., Khlupnov A.I. Provedenie eksperimental'nykh issledovaniy na ballisticheskoy trasse [Taking experimental research on ballistic track]. Moscow, Bauman Press, 2016, 37 p.
- [12] Zhileykin V.D. Reshenie uravneniy vneshney ballistiki na EVM. V 3 ch. [Computer solution of exterior ballistic equations. In 3 vol.]. Moscow, Bauman Press, 2003.

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