

Control of the gyroscopic observation and tracking system on deck of the quadrotor unmanned aerial vehicle in the conditions of random interference impact

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Abstract: The paper presents the method control of the gyroscopic observation and tracking system located on the Quadrotor Unmanned Aerial Vehicle (QUAV), whose task is to track and laser illumination of the ground target. Taking into account the maneuvers performed by QUAV and the vibration of its deck as well as the occurrence of both process and measurement noise, it is necessary to restore state variables and filtering measurement data. Therefore, in the said gyroscopic system, an extended Kalman filter was used, along with a modified LQR regulator. As a result of such a synthesis, an LQG regulator (using Jacobian instead of a state matrix) was used, which ensures precision of tracking and illumination of the target. Some results of numerical simulation tests are presented in a graphical form.

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