Employing functional lead
to improve homing system efficiency

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The paper considers employing two radar seeker types for aircraft guidance. The first one is a seeker equipped with a target tracker featuring synchronous servo drives operating in two perpendicular planes. The second one is a seeker equipped with a zoom lens, which gauges bearing angle components in order to home the aircraft. We compared and analysed simulation results for the case of aircraft equipped with the seekers described above. We show that the zoom lens seeker displays lower guidance quality than a gimbal-mounted seeker; however, this seeker is more efficient economically. In order to expand the hit region when using the zoom lens seeker, we suggest using functional lead, which makes it possible to not only enlarge the hit region but also match the region generated by gimbal-mounted seekers. We demonstrate how to determine functional lead parameters. We present several principles of designing functional lead algorithms and our numerical computation results.

***Keywords**: homing, aircraft, hit region, functional lead*

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