

# **The Impact of an Integrated GPS and Glonass Satellite Geometry in Differential GNSS Positioning**

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## **SUMMARY**

The satellite geometry constitutes a major factor in determining the precision of satellite based positioning system. In precise point positioning as well as differential positioning, the number of visible satellites affect the satellite geometry which in turn affects Position Dilution of Precision (PDOP) and accuracy in positioning. In the use of GPS only observations in areas such as urban canyons, mountains and open-pit mines, satellite visibility by the GPS receiver is greatly reduced as multipath effect is very high. This underscores the need to integrate GPS and GLONASS observations to improve the satellite visibility and Geometry. The research focuses on differential observations carried out on some selected control points within University of Lagos, Nigeria, using a GNSS receiver in static mode. The results were post processed using only the GPS observations and then integrated with the GLONASS observations. Although, Differential GNSS observation increases accuracy in satellite positioning, the integrated observation was found to have higher number of visible satellite, better geometry and PDOP, lower standard error in range measurement and positioning.