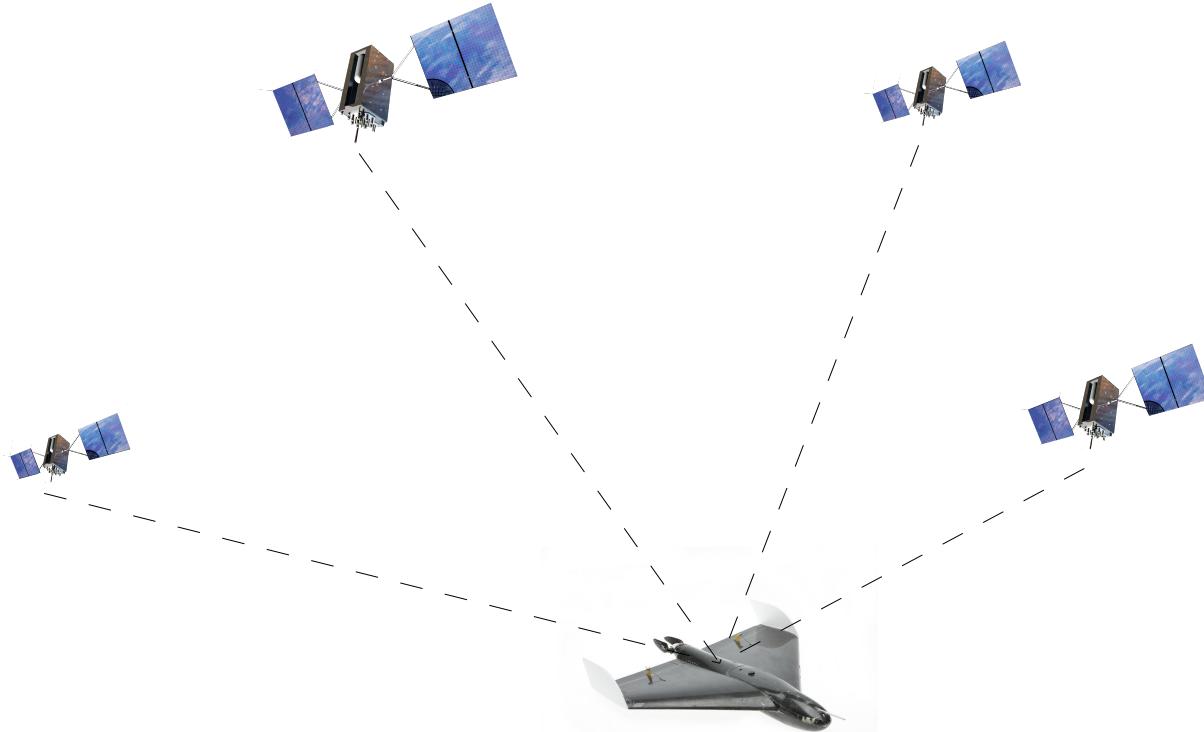
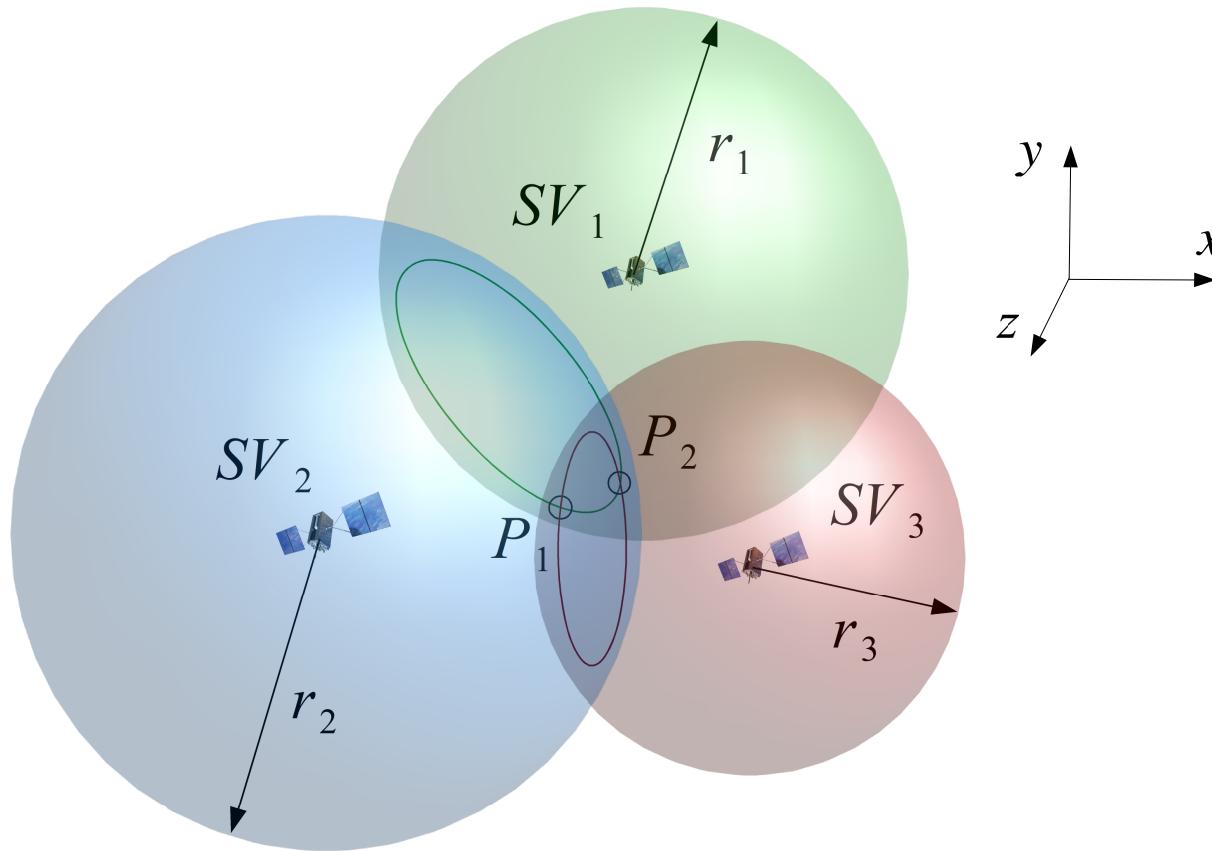


A robust GPS Local Area Augmentation System for small UAVs



1. Introduction GNSS
2. Measurement Errors
3. Differential Methods

- Basic idea: Signal phase shift \Rightarrow slant range to satellite



Navigation Equation:

$$PR_i = |\vec{x}_{SV_i}| + c(\Delta t_{SV_i} + \Delta t_{Rx}) + d_{Ion, i} + d_{Trop, i} + d_{HW} + d_{MP}$$

Measurement Errors

Single receiver GPS range error budget		
Segment	Source	Error $1\sigma[m]$
Space/Control	Satellite clock	1.1
	Broadcast ephemeris	0.8
User	Ionospheric delay	7.0
	Tropospheric delay	0.2
	Receiver correlator noise and resolution	0.1
	Multipath	0.2

Table 1: Single receiver L1 C/A range error budget [Kaplan, 2. E.]

