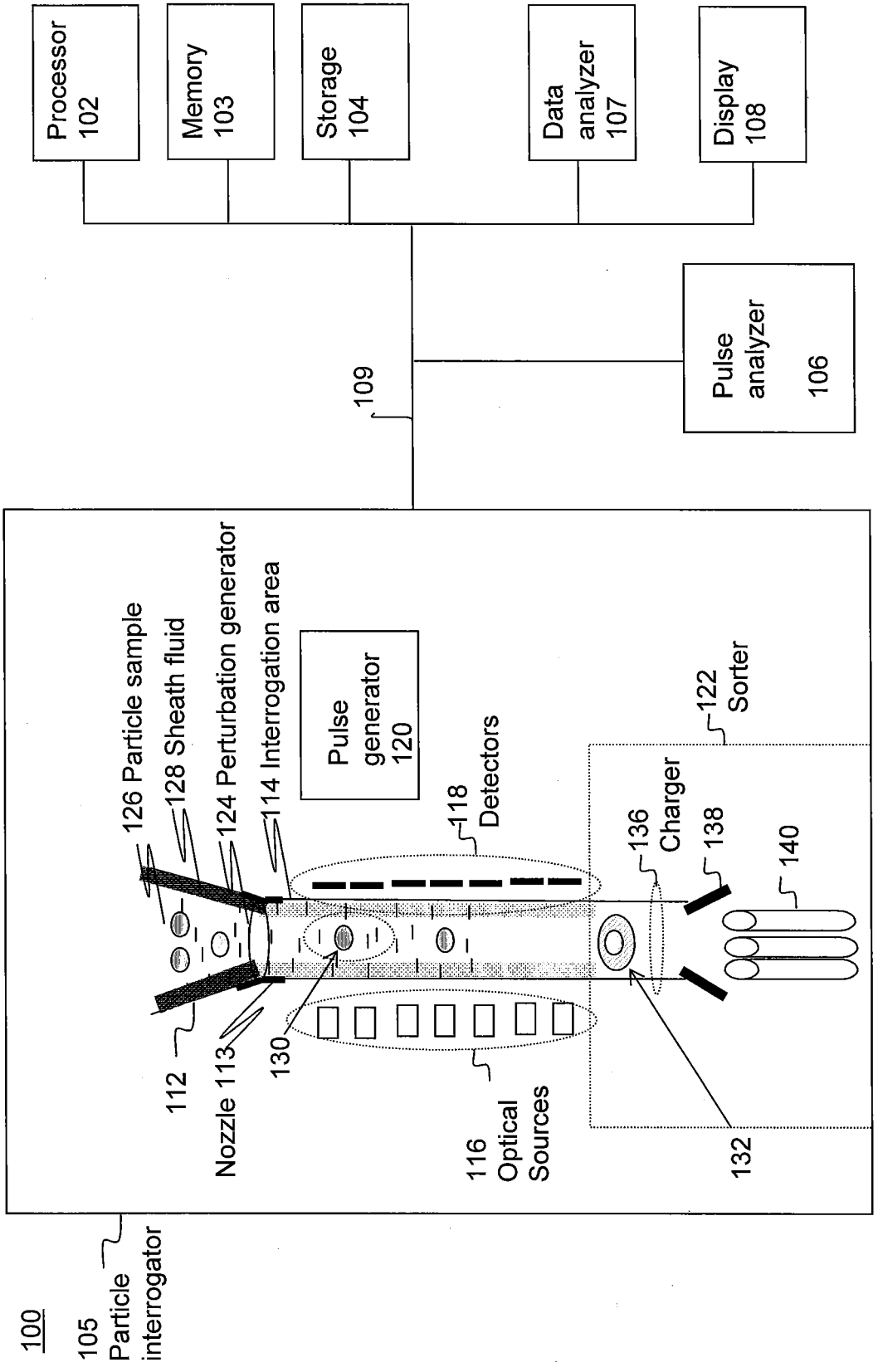
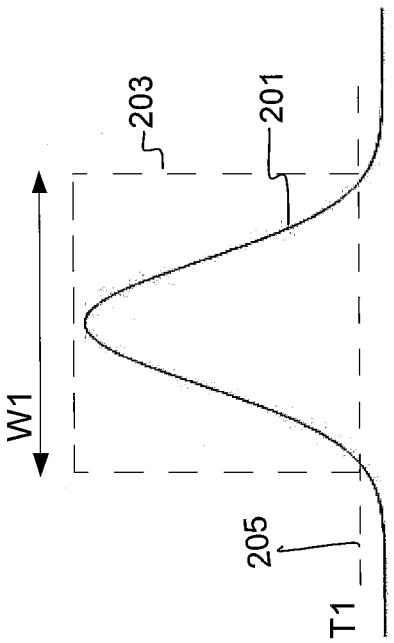

Processor 102
Memory 103
Storage 104
Data analyzer 107
Display 108
109
Pulse analyzer 106
100
105 Particle interrogator
126 Particle sample
128 Sheath fluid
124 Perturbation generator
114 Interrogation area
Pulse generator 120
118 Detectors
122 Sorter
136 Charger
138
140
112
Nozzle 113
130
116 Optical Sources
132

FIG. 1

FIG. 2



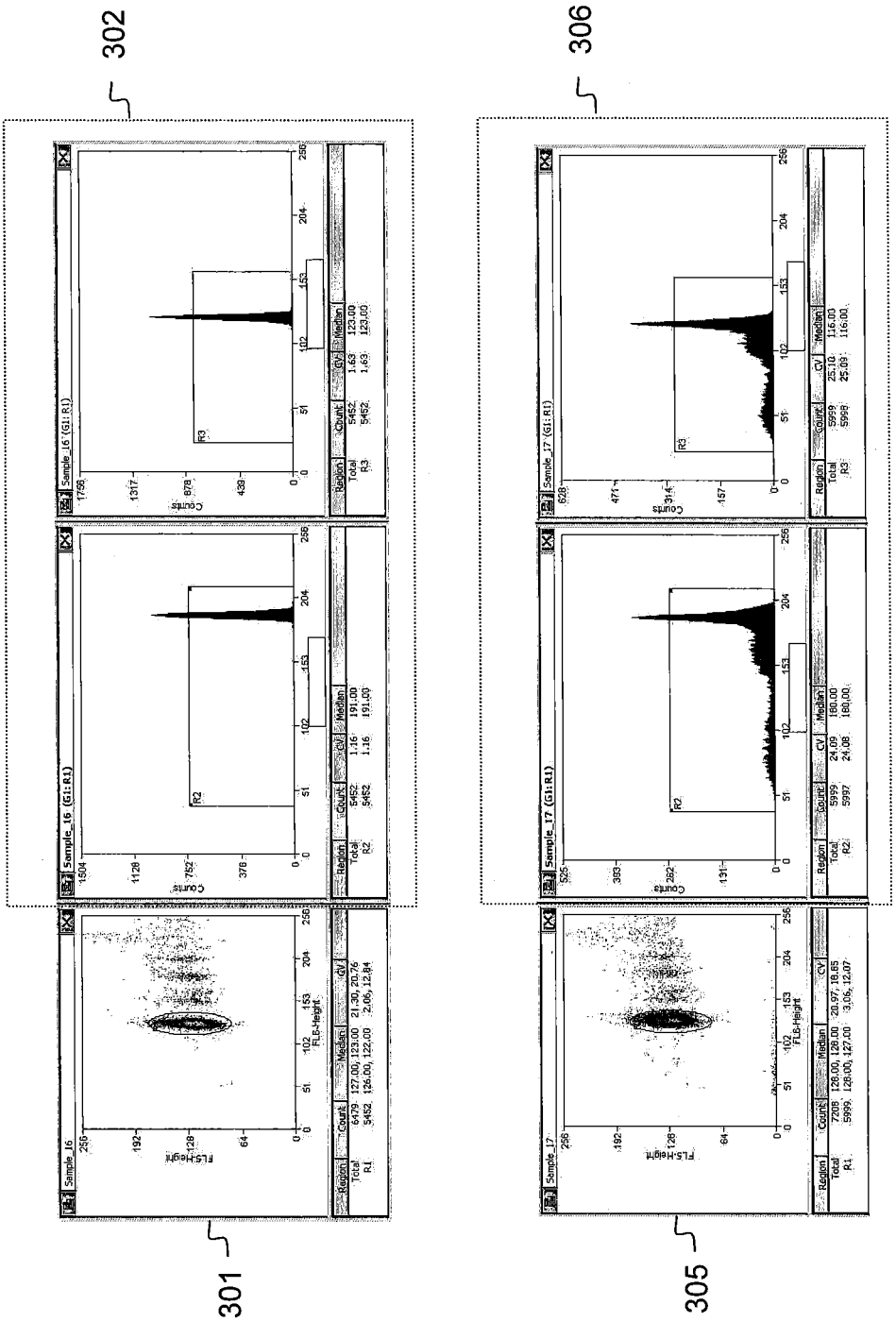


FIG. 3

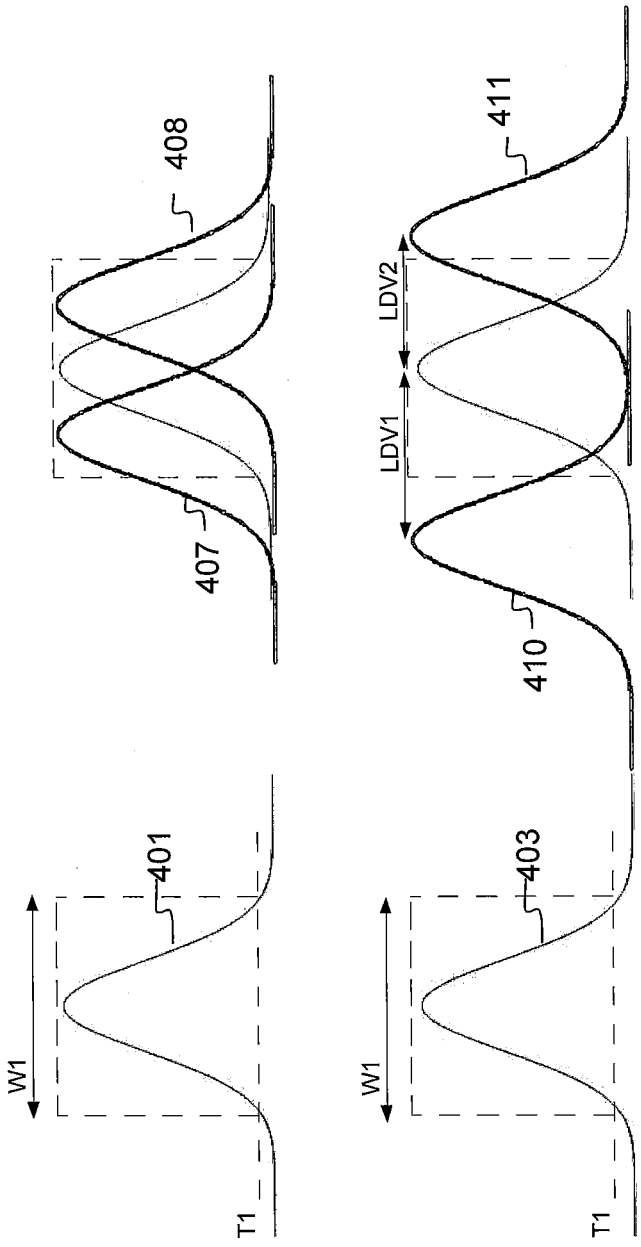


FIG. 4

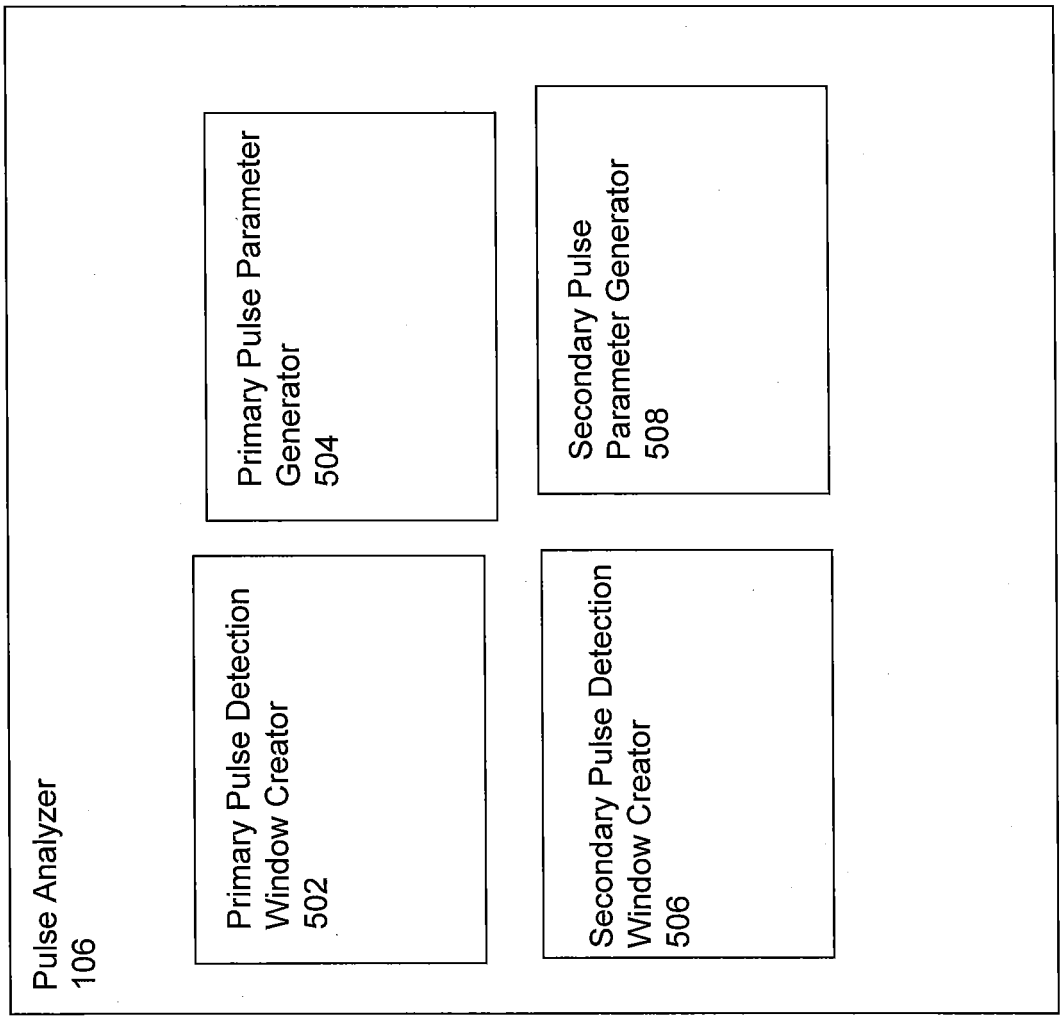

Pulse Analyzer
106
Primary Pulse Detection Window Creator
502
Primary Pulse Parameter Generator
504
Secondary Pulse Detection Window Creator
506
Secondary Pulse Parameter Generator
508

FIG. 5

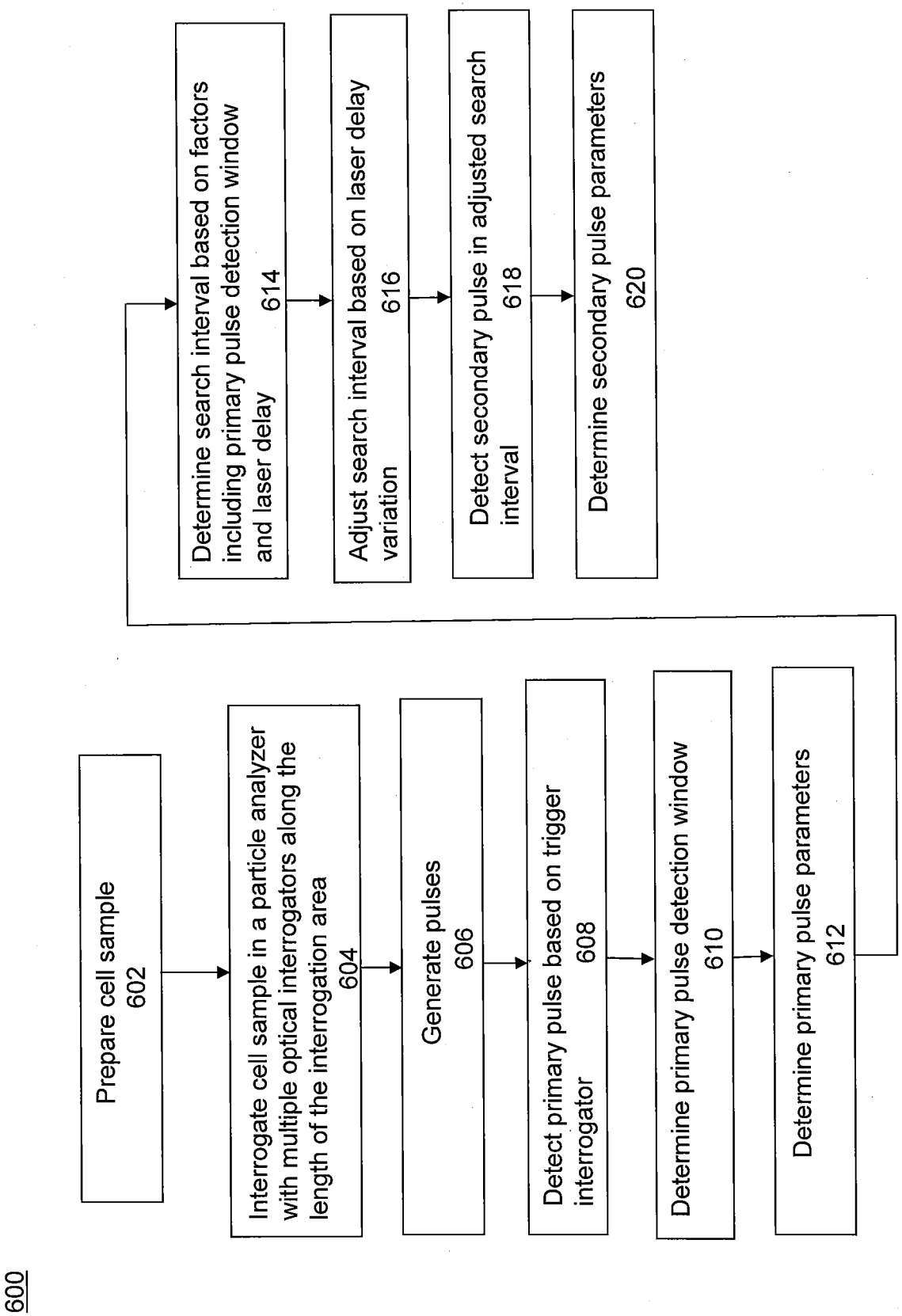

600
Prepare cell sample 602
Interrogate cell sample in a particle analyzer with multiple optical interrogators along the length of the interrogation area 604
Generate pulses 606
Detect primary pulse based on trigger interrogator 608
Determine primary pulse detection window 610
Determine primary pulse parameters 612
Determine search interval based on factors including primary pulse detection window and laser delay 614
Adjust search interval based on laser delay variation 616
Detect secondary pulse in adjusted search interval 618
Determine secondary pulse parameters 620

FIG. 6

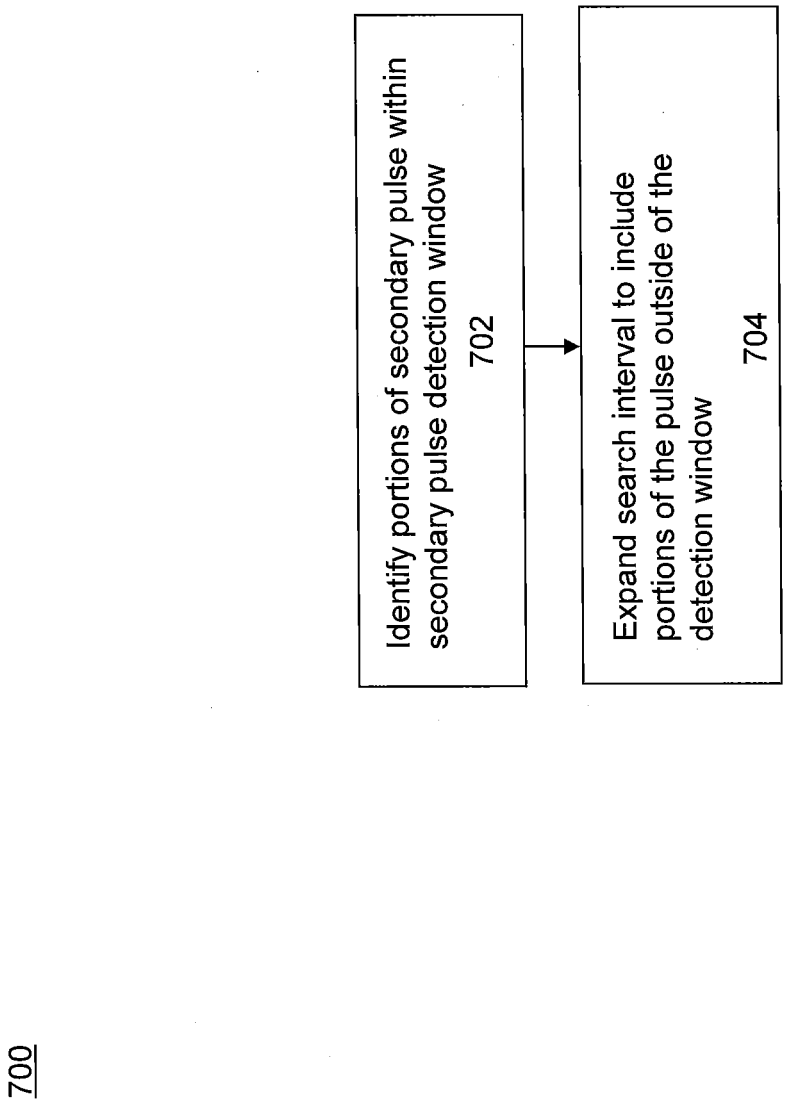

700
Identify portions of secondary pulse within secondary pulse detection window
702
Expand search interval to include portions of the pulse outside of the detection window
704

FIG. 7

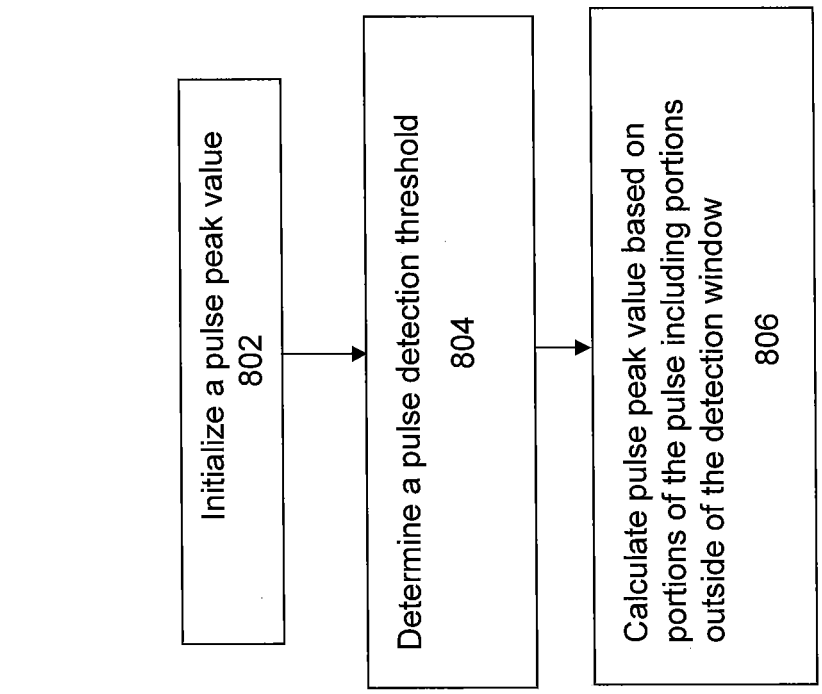

800
Initialize a pulse peak value
802
Determine a pulse detection threshold
804
Calculate pulse peak value based on portions of the pulse including portions outside of the detection window
806

FIG. 8

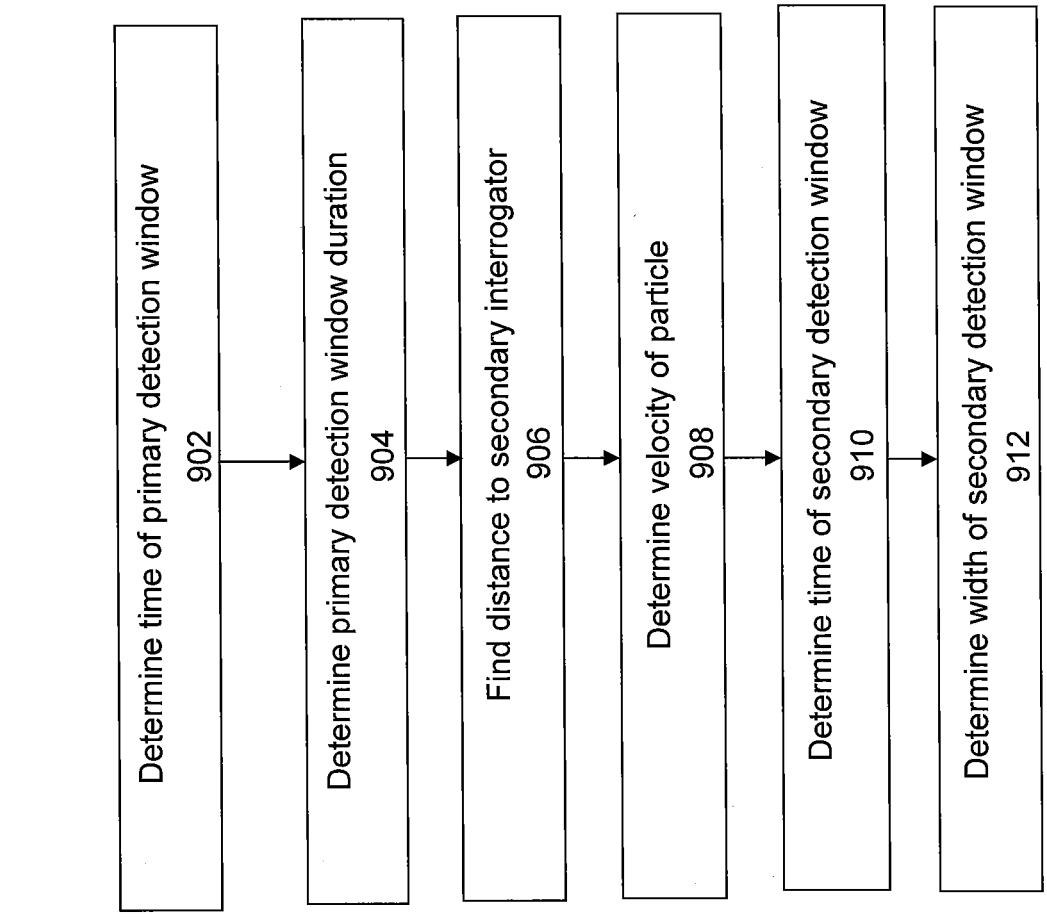

900
Determine time of primary detection window
902
Determine primary detection window duration
904
Find distance to secondary interrogator
906
Determine velocity of particle
908
Determine time of secondary detection window
910
Determine width of secondary detection window
912

FIG. 9

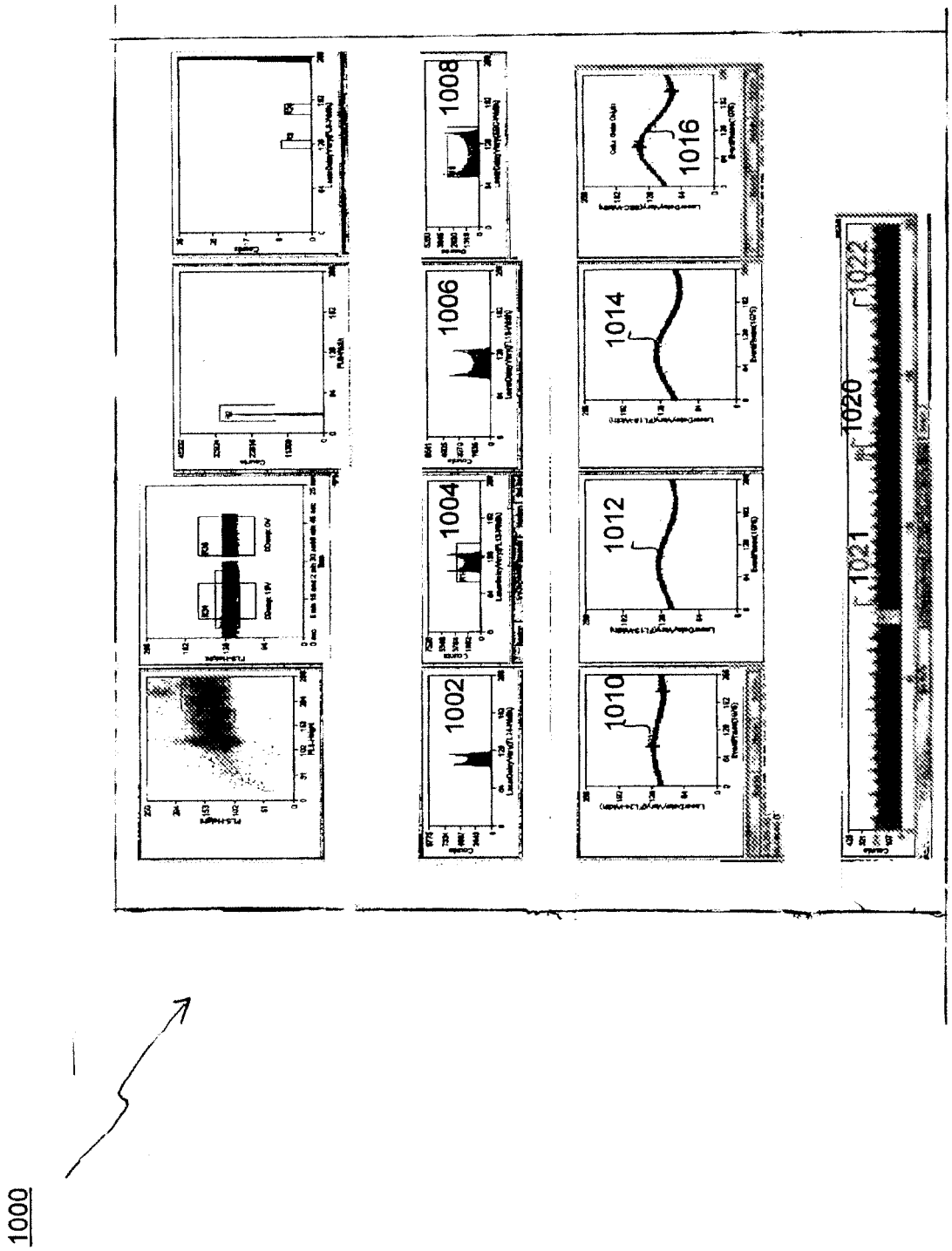


FIG. 10

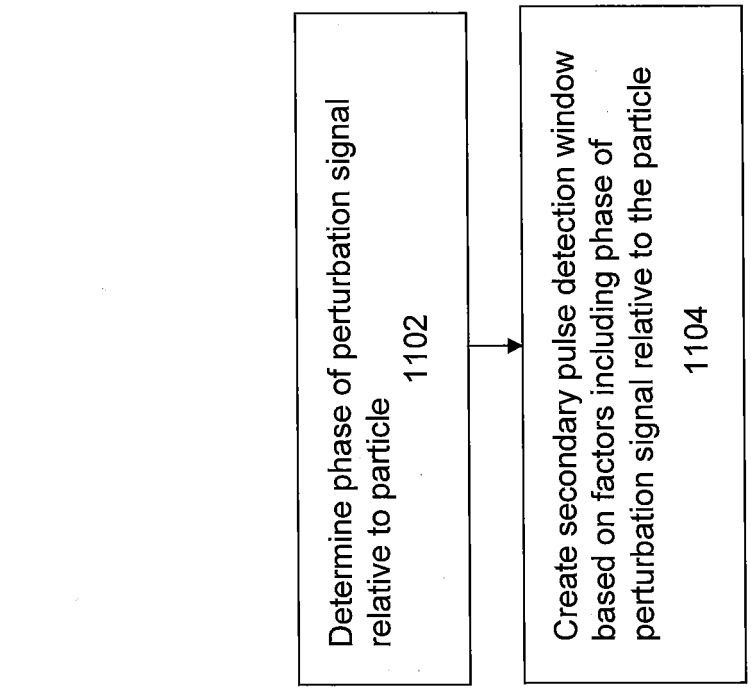

1100
Determine phase of perturbation signal relative to particle
1102
Create secondary pulse detection window based on factors including phase of perturbation signal relative to the particle
1104

FIG. 11