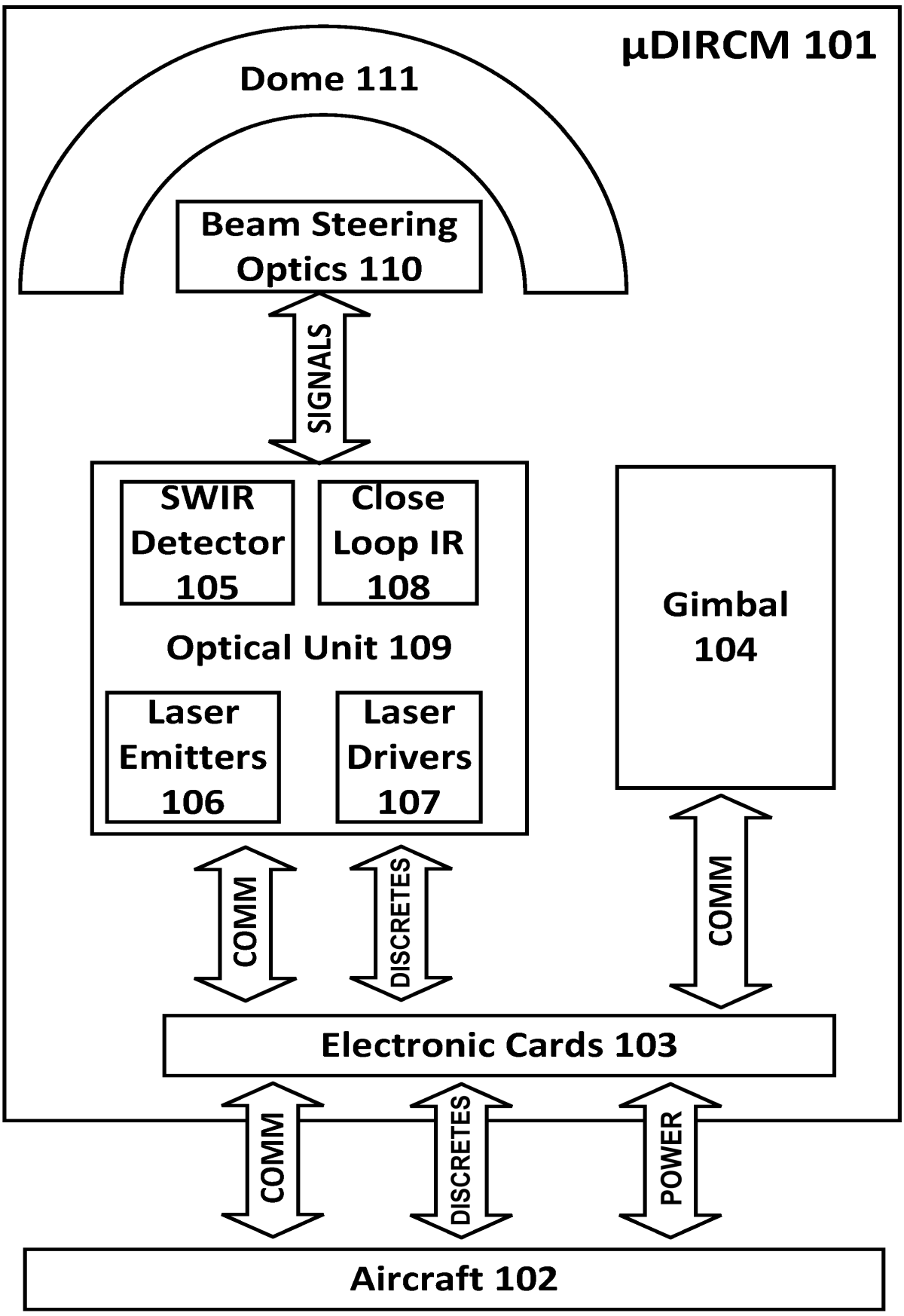

µDIRCM 101
Dome 111
Beam Steering Optics 110
SIGNALS
SWIR Detector 105
Close Loop IR 108
Optical Unit 109
Laser Emitters 106
Laser Drivers 107
Gimbal 104
COMM
DISCRETES
COMM
Electronic Cards 103
COMM
DISCRETES
POWER
Aircraft 102
100

Fig. 1

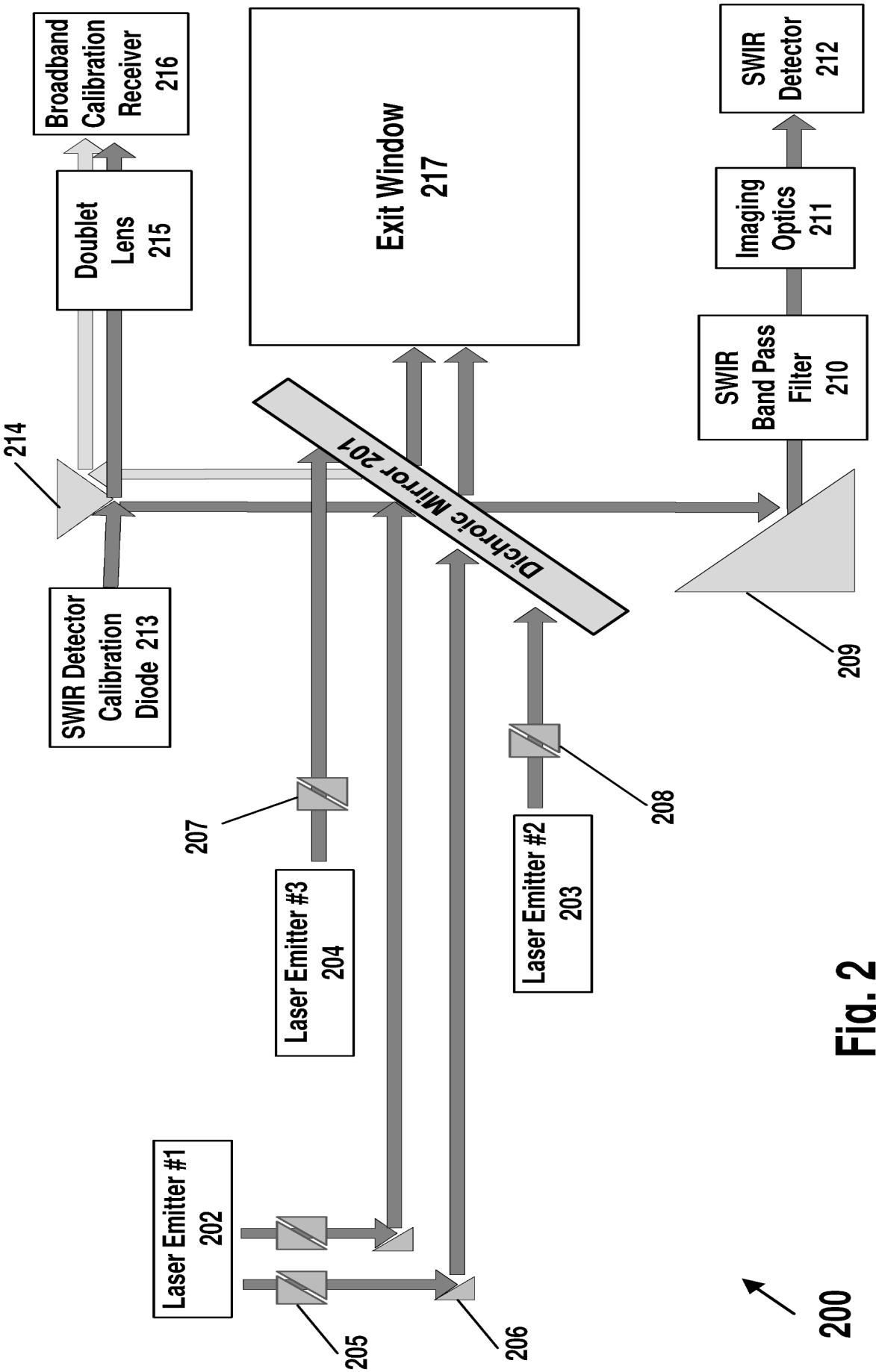

Broadband Calibration Receiver 216
Doublet Lens 215
Exit Window 217
SWIR Detector 212
Imaging Optics 211
SWIR Band Pass Filter 210
214
Dichroic Mirror 201
SWIR Detector Calibration Diode 213
209
207
208
Laser Emitter #3 204
Laser Emitter #2 203
Laser Emitter #1 202
205
206
200

Fig. 2

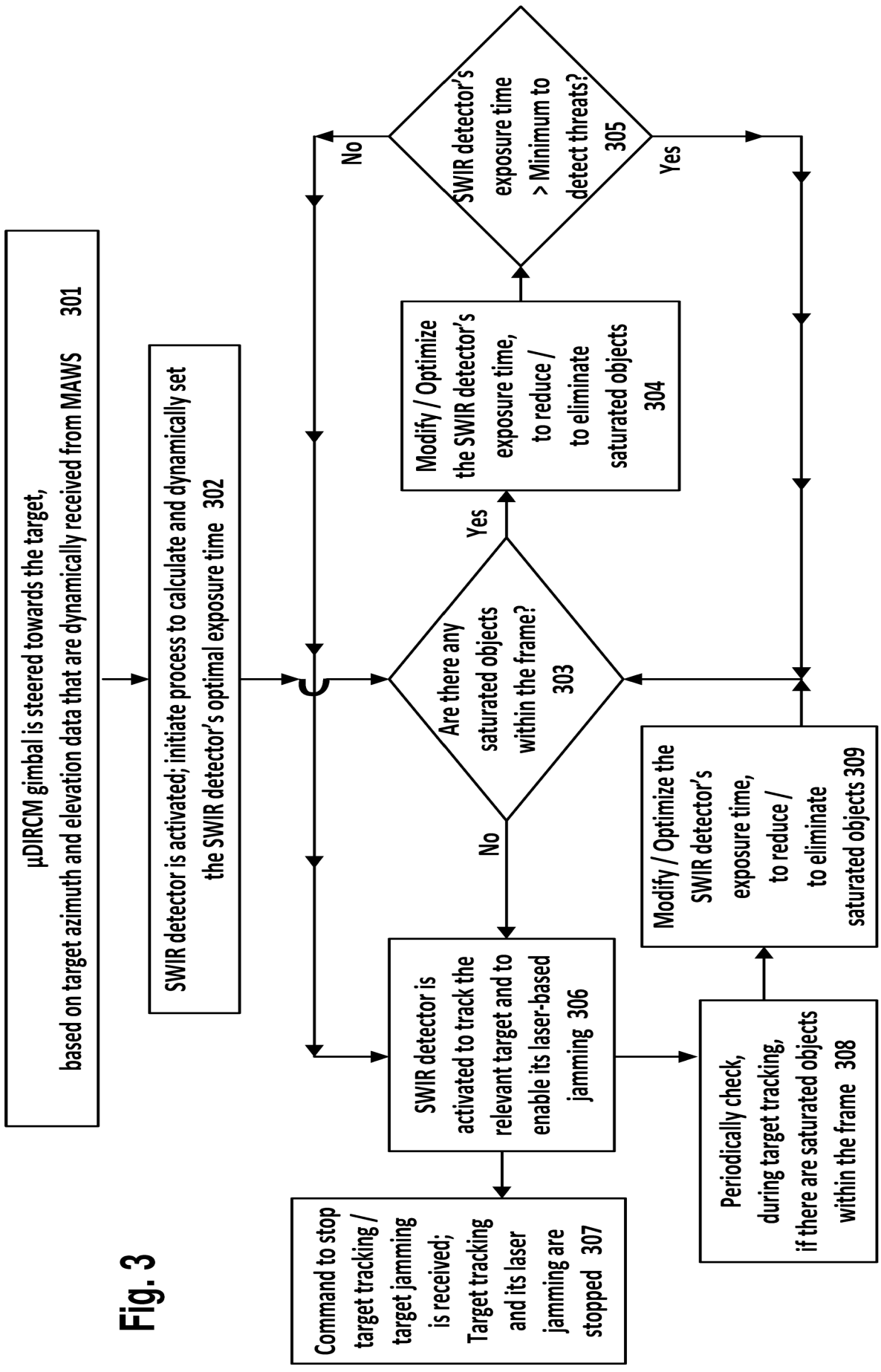

µDIRCM gimbal is steered towards the target, based on target azimuth and elevation data that are dynamically received from MAWS 301
SWIR detector is activated; initiate process to calculate and dynamically set the SWIR detector's optimal exposure time 302
Are there any saturated objects within the frame? 303
Yes
No
Modify / Optimize the SWIR detector's exposure time, to reduce / to eliminate saturated objects 304
SWIR detector's exposure time > Minimum to detect threats? 305
No
Yes
SWIR detector is activated to track the relevant target and to enable its laser-based jamming 306
Command to stop target tracking / target jamming is received; Target tracking and its laser jamming are stopped 307
Periodically check, during target tracking, if there are saturated objects within the frame 308
Modify / Optimize the SWIR detector's exposure time, to reduce / to eliminate saturated objects 309

Fig. 3

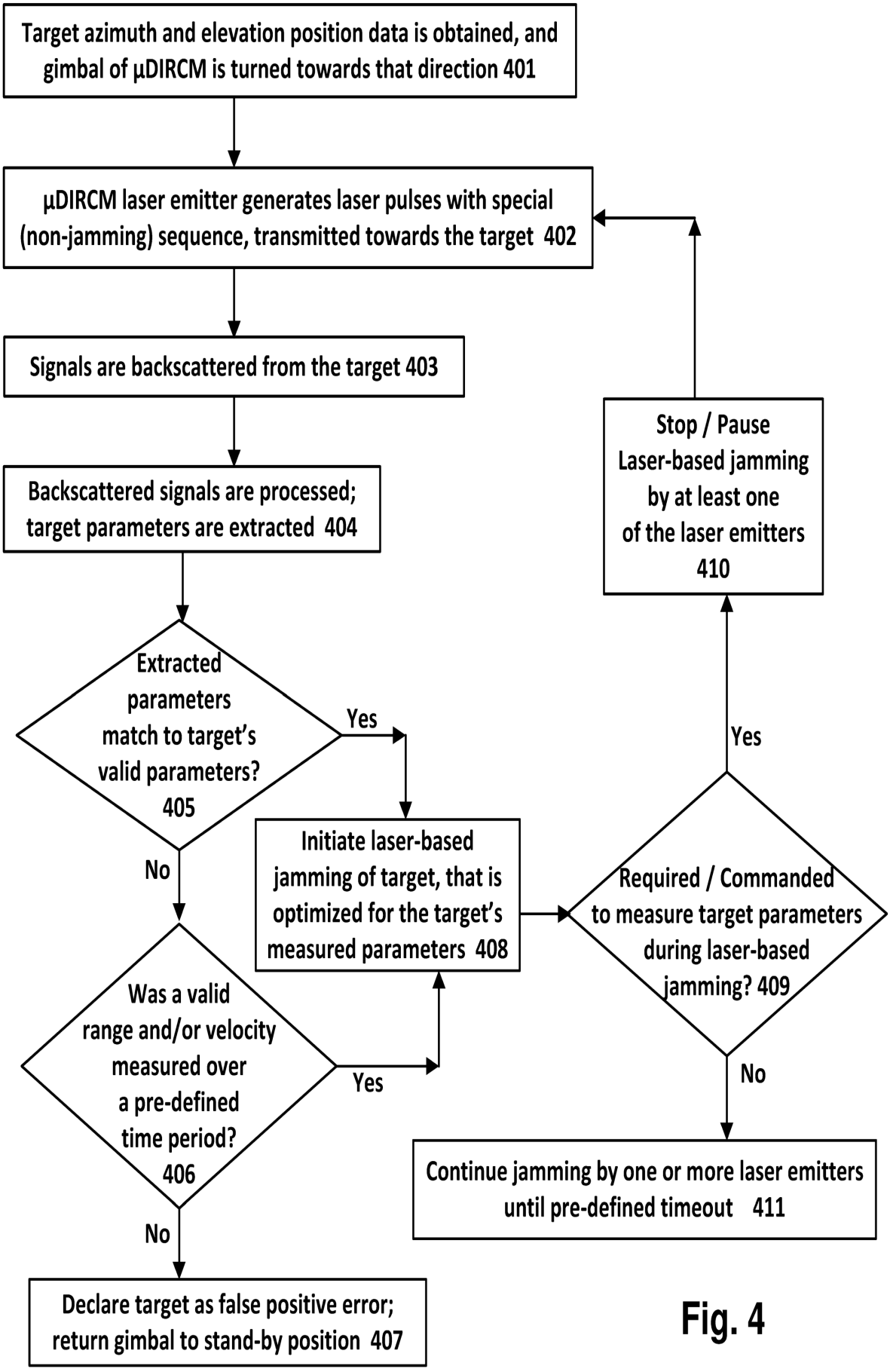

Target azimuth and elevation position data is obtained, and gimbal of µDIRCM is turned towards that direction 401
µDIRCM laser emitter generates laser pulses with special (non-jamming) sequence, transmitted towards the target 402
Signals are backscattered from the target 403
Backscattered signals are processed; target parameters are extracted 404
Extracted parameters match to target's valid parameters? 405
Yes
No
Initiate laser-based jamming of target, that is optimized for the target's measured parameters 408
Was a valid range and/or velocity measured over a pre-defined time period? 406
Yes
No
Declare target as false positive error; return gimbal to stand-by position 407
Required / Commanded to measure target parameters during laser-based jamming? 409
Yes
No
Stop / Pause Laser-based jamming by at least one of the laser emitters 410
Continue jamming by one or more laser emitters until pre-defined timeout 411

Fig. 4

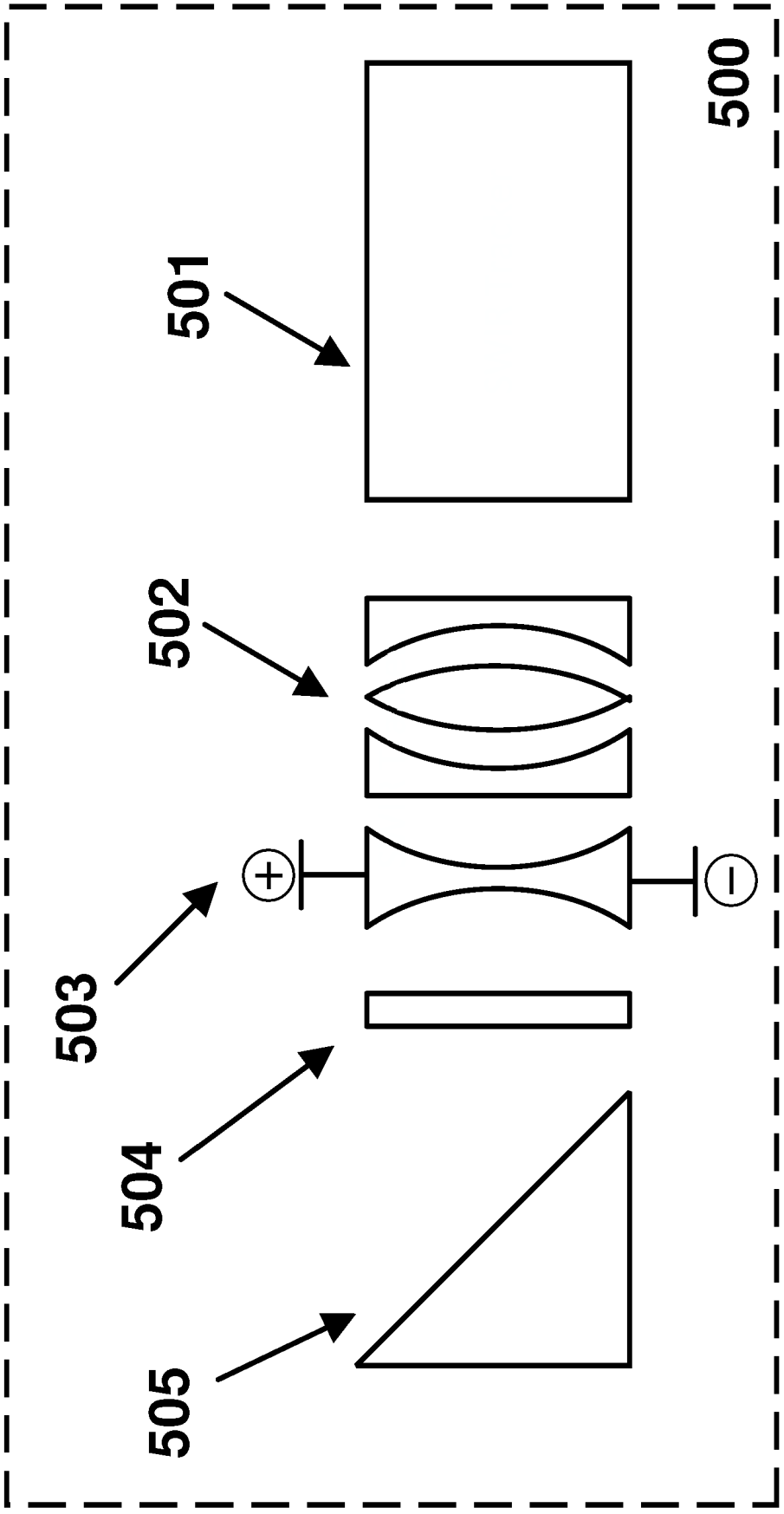


Fig. 5A

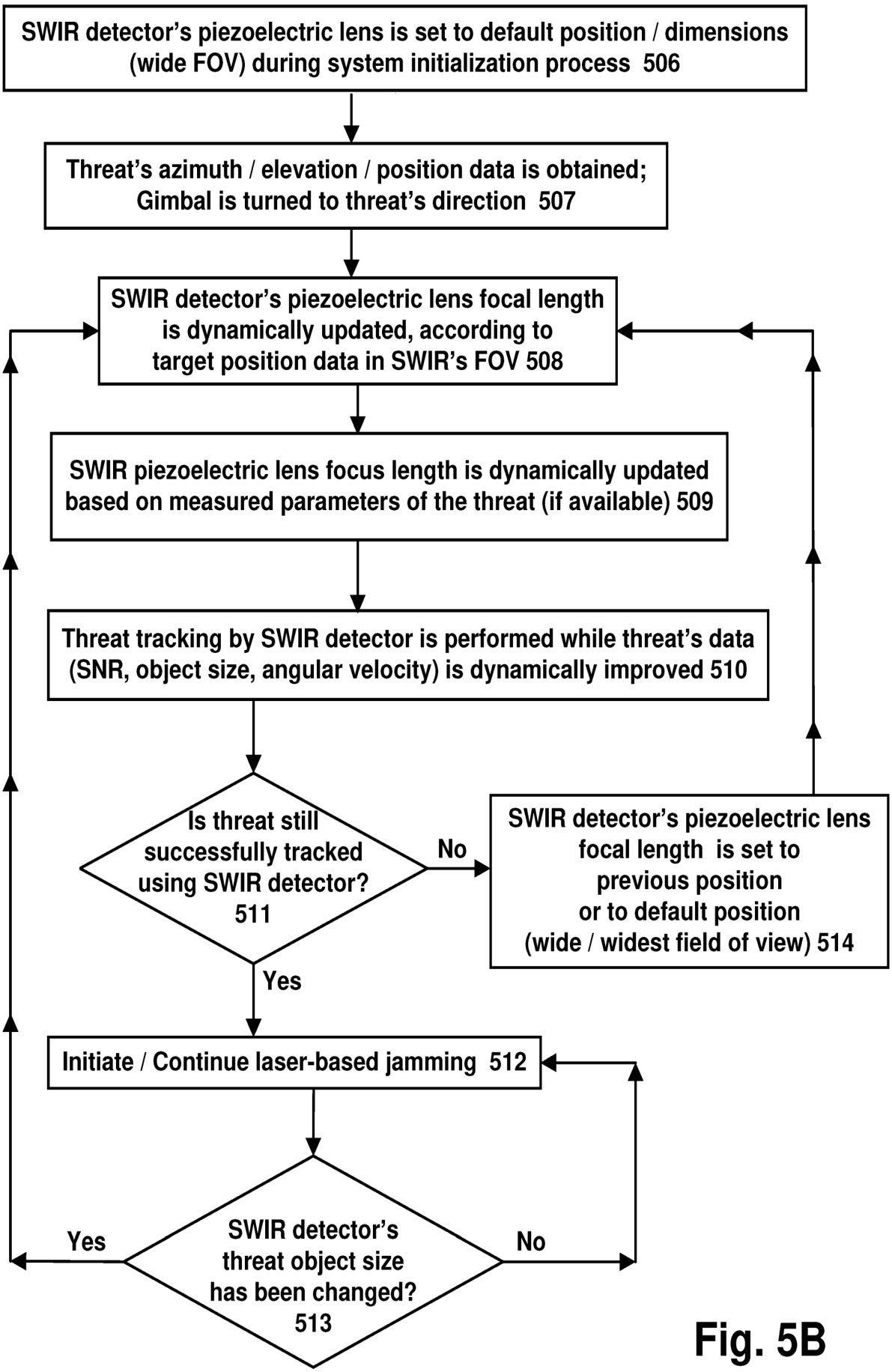
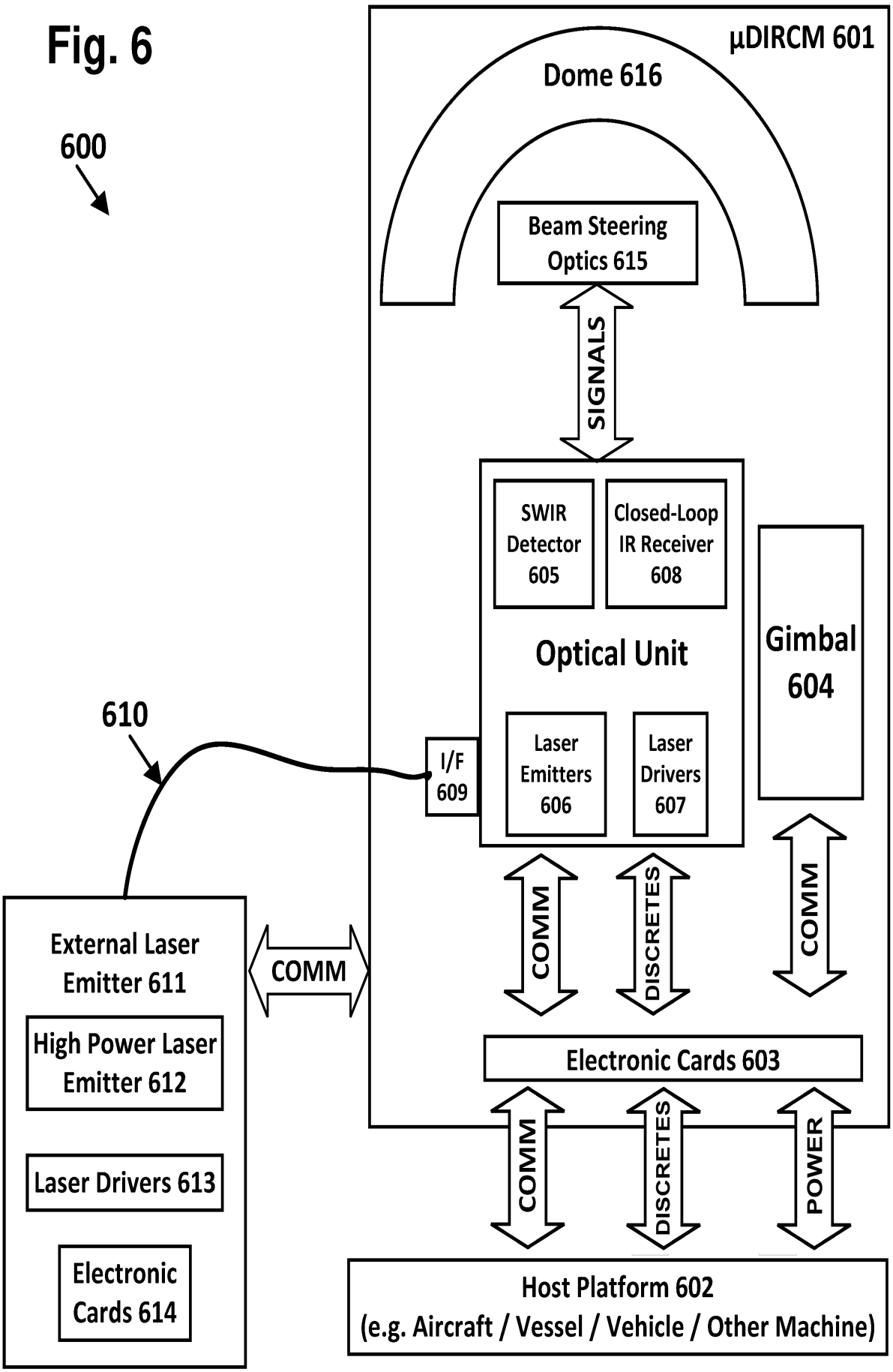

SWIR detector's piezoelectric lens is set to default position / dimensions (wide FOV) during system initialization process 506
Threat's azimuth / elevation / position data is obtained; Gimbal is turned to threat's direction 507
SWIR detector's piezoelectric lens focal length is dynamically updated, according to target position data in SWIR's FOV 508
SWIR piezoelectric lens focus length is dynamically updated based on measured parameters of the threat (if available) 509
Threat tracking by SWIR detector is performed while threat's data (SNR, object size, angular velocity) is dynamically improved 510
Is threat still successfully tracked using SWIR detector? 511
No
SWIR detector's piezoelectric lens focal length is set to previous position or to default position (wide / widest field of view) 514
Yes
Initiate / Continue laser-based jamming 512
SWIR detector's threat object size has been changed? 513
Yes
No

Fig. 5B

Fig. 6


600
µDIRCM 601
Dome 616
Beam Steering Optics 615
SIGNALS
SWIR Detector 605
Closed-Loop IR Receiver 608
Optical Unit
Gimbal 604
610
I/F 609
Laser Emitters 606
Laser Drivers 607
COMM
DISCRETES
COMM
External Laser Emitter 611
COMM
High Power Laser Emitter 612
Electronic Cards 603
Laser Drivers 613
COMM
DISCRETES
POWER
Electronic Cards 614
Host Platform 602
(e.g. Aircraft / Vessel / Vehicle / Other Machine)

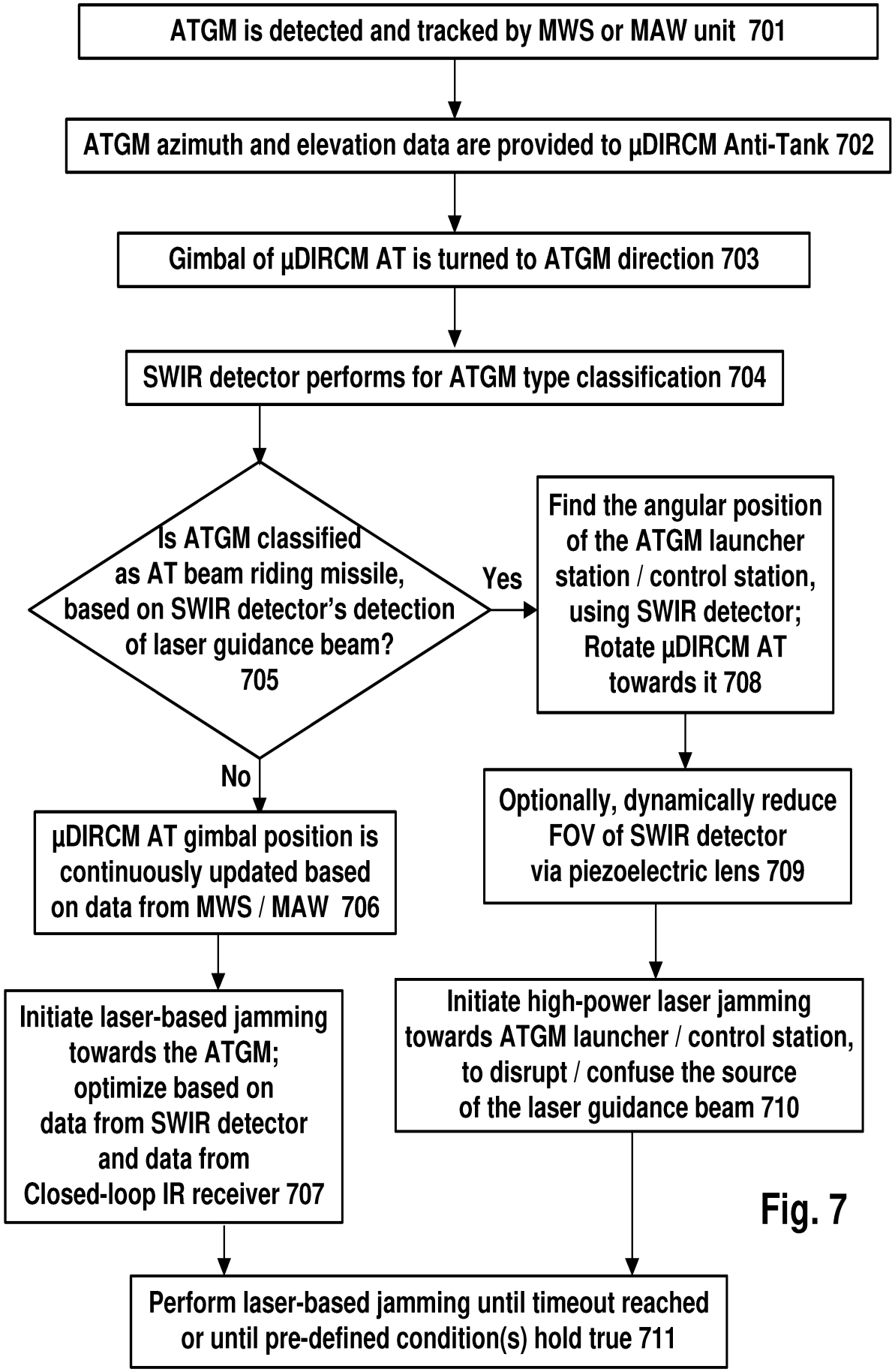

ATGM is detected and tracked by MWS or MAW unit 701
ATGM azimuth and elevation data are provided to µDIRCM Anti-Tank 702
Gimbal of µDIRCM AT is turned to ATGM direction 703
SWIR detector performs for ATGM type classification 704
Is ATGM classified as AT beam riding missile, based on SWIR detector's detection of laser guidance beam? 705
Yes
No
Find the angular position of the ATGM launcher station / control station, using SWIR detector; Rotate µDIRCM AT towards it 708
Optionally, dynamically reduce FOV of SWIR detector via piezoelectric lens 709
µDIRCM AT gimbal position is continuously updated based on data from MWS / MAW 706
Initiate laser-based jamming towards the ATGM; optimize based on data from SWIR detector and data from Closed-loop IR receiver 707
Initiate high-power laser jamming towards ATGM launcher / control station, to disrupt / confuse the source of the laser guidance beam 710
Perform laser-based jamming until timeout reached or until pre-defined condition(s) hold true 711

Fig. 7

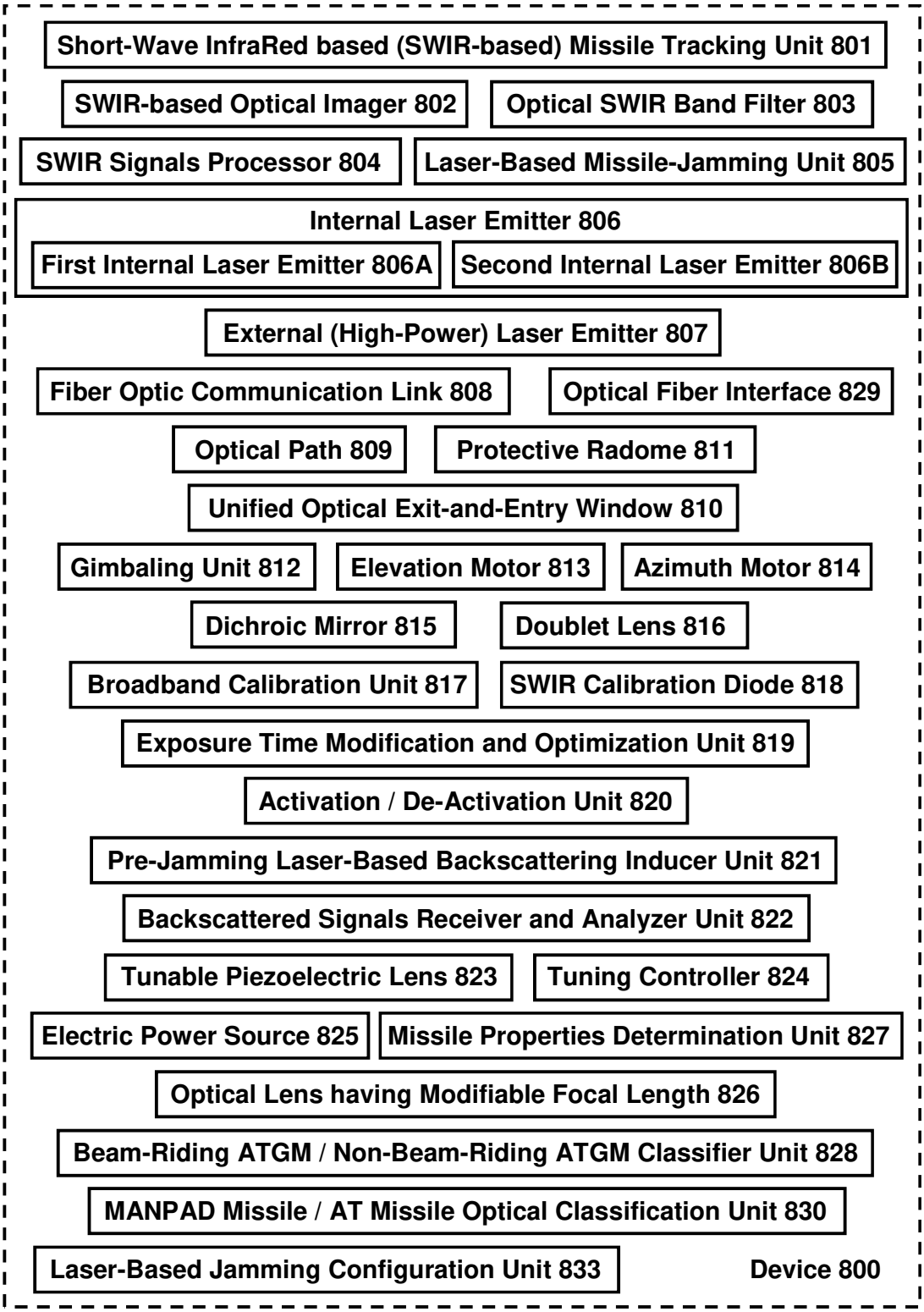

Short-Wave InfraRed based (SWIR-based) Missile Tracking Unit 801
SWIR-based Optical Imager 802
Optical SWIR Band Filter 803
SWIR Signals Processor 804
Laser-Based Missile-Jamming Unit 805
Internal Laser Emitter 806
First Internal Laser Emitter 806A
Second Internal Laser Emitter 806B
External (High-Power) Laser Emitter 807
Fiber Optic Communication Link 808
Optical Fiber Interface 829
Optical Path 809
Protective Radome 811
Unified Optical Exit-and-Entry Window 810
Gimbaling Unit 812
Elevation Motor 813
Azimuth Motor 814
Dichroic Mirror 815
Doublet Lens 816
Broadband Calibration Unit 817
SWIR Calibration Diode 818
Exposure Time Modification and Optimization Unit 819
Activation / De-Activation Unit 820
Pre-Jamming Laser-Based Backscattering Inducer Unit 821
Backscattered Signals Receiver and Analyzer Unit 822
Tunable Piezoelectric Lens 823
Tuning Controller 824
Electric Power Source 825
Missile Properties Determination Unit 827
Optical Lens having Modifiable Focal Length 826
Beam-Riding ATGM / Non-Beam-Riding ATGM Classifier Unit 828
MANPAD Missile / AT Missile Optical Classification Unit 830
Laser-Based Jamming Configuration Unit 833
Device 800

Fig. 8