CELESTE

IACTEC Space

PATENTED TECHNOLOGY OFFER - SPACE IMAGING SENSORS

SEE CLEARLY FLY LIGHTER

Dark Current Pattern Estimation for Space Imaging Sensors

Every imaging sensor produces invisible background noise that degrades image quality — and conventional fixes require bulky thermal control hardware and mechanical shutters, adding cost, mass and power to every mission.

IAC's patented method eliminates that dependency entirely. One laboratory calibration before launch delivers pristine imagery at any operating temperature. Validated in three space missions and ready to fly on yours.

TRL9	3	PATENT	SWAP
FLIGHT READY	SPACE MISSIONS	PROTECTED IP	OPTIMIZED



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DARK CURRENT PATTERN ESTIMATION HETHOD

WHY THIS TECHNOLOGY CHANGES THE GAME

COMPETITIVE ADVANTAGES

Accuracy
Matches the quality of in-situ calibration at a fraction of the hardware cost.

SWaP Reduction
Eliminate thermal stabilizers and mechanical shutters. Critical for CubeSats, UAVs and deep-space probes.

Easy to embed
Algorithm can run on the camera itself — no ground processing required.

Sensor-Agnostic
Adapts to any InGaAs sensor, even under wide operating temperature ranges.

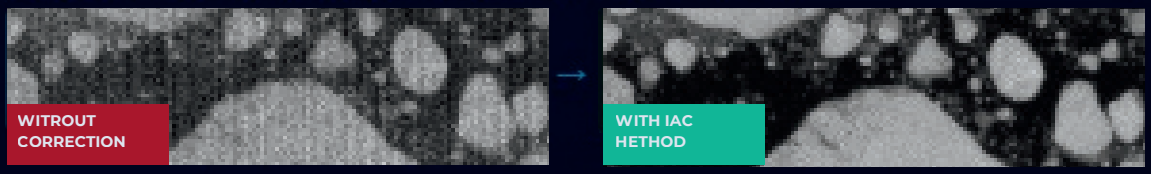
HOW IT WORKS

1. **One-time lab calibration (pre-launch)**
Sensor characterized across its full operating temperature range. A compact calibration file is stored on-board.

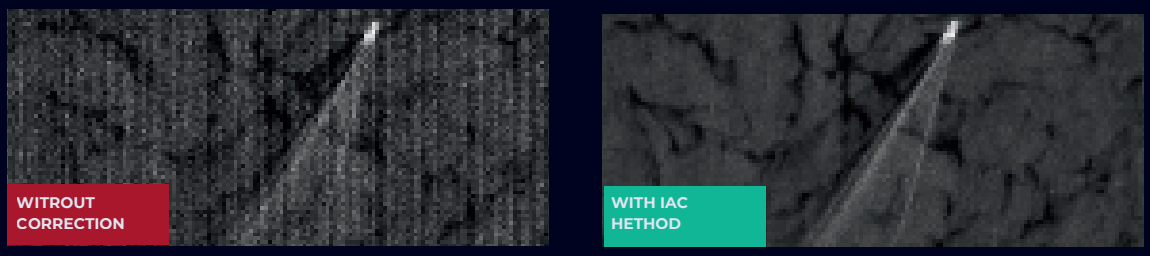
2. **In-flight dark pattern estimation**
The algorithm reconstructs the background noise according to the current sensor temperature – no shutter needed.

3. **Real-time image correction**
Clean, ready-to-use imagery delivered at any operating temperature.

REAL-WORLD RESULT — DRAGO-2 ABOARD ALISIO-1 UNCOOLED SWIR SENSOR



Greenland coast. Glacier ice and snow are challenging to image due to their low reflectivities at these wavelengths.



Mediterranean Sea. Proper correction of maritime images reveals further details about water texture and ship water trails.

TARGET MARKETS

Small Satellites	Automotive ADAS
Earth Observation	Environmental
Deep Space	Industrial
Aerospace / UAV	Scientific Instr.

IAC offers licensing or full assignment of this patent, with technical support for integration into your sensor platform and mission profile.

VALIDATED FLIGHT HERITAGE

- DRAGO-1 — Uncooled SWIR · 300 m/pixel · In orbit since Dec 2021.
- DRAGO-2— Uncooled SWIR · 50 m/pixel · In orbit since Jan 2023.
- DRAGO-2 on board ALISIO-1— First Canary Islands EO satellite · In orbit since Dec 2023
- **UPCOMING**. DRAGO-3 on board of the Canary Islands Constellation — Extended InGaAs · 9.1 m/pixel · Expected launch 2027

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