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• **Airbus Defence and Space GmbH**
82024 Taufkirchen (DE)

(72) Inventors:
• **TOURNEUR, Cyril**
31402 Toulouse cedex 4 (FR)
• **FISCHER, Christian**
88090 Immenstaad am Bodensee (DE)

(71) Applicants:
• **Airbus Defence and Space SAS**
31402 Toulouse Cedex 4 (FR)

(74) Representative: **Ipside**
6, Impasse Michel Labrousse
31100 Toulouse (FR)

(54) **SURVEILLANCE OF SPACE DEBRIS BASED ON RADAR AND OPTICAL MEASUREMENTS BY A GROUP OF SATELLITES FLYING IN FORMATION**

(57) A method and a system are proposed for determining an initial orbit of a piece of space debris (15). Each one of a group of at least two satellites (10) flying in formation in orbit around the Earth embed a radar instrument and an optical camera configured to scan a volume of interest that is common to all the satellites of the group. The satellites (10) provide a mix of radar and optical measurements for at least eight independent geometrical parameters of the piece of space debris (15) when it passes in the volume of interest. Each independent geometrical parameter is one of:

- a radar measurement comprising a mono-static range or range rate, or a bi-static range or range rate,
- an optical measurement comprising an azimuth or an elevation angle.

The initial orbit of the piece of space debris (15) is determined based on the measurements provided.

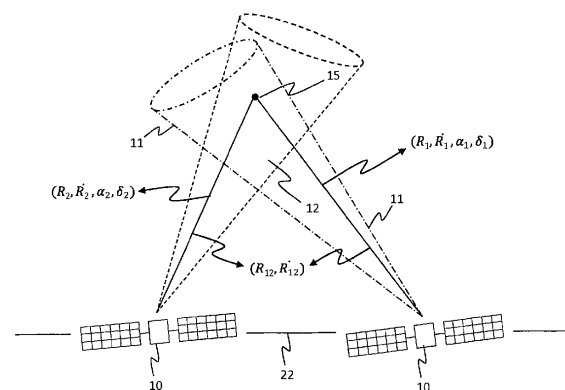


Fig. 2

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