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Edited by Kyriaki Minoglou, Nikos Karafolas, and Bruno Cugny,



Innovative optics in ESA's Space Science Program





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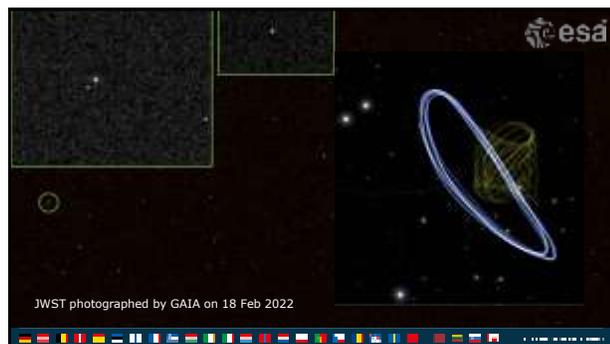
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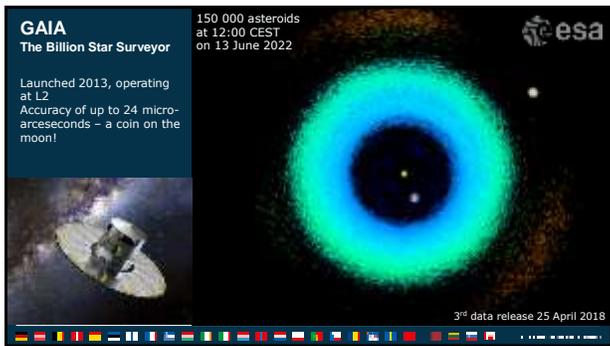
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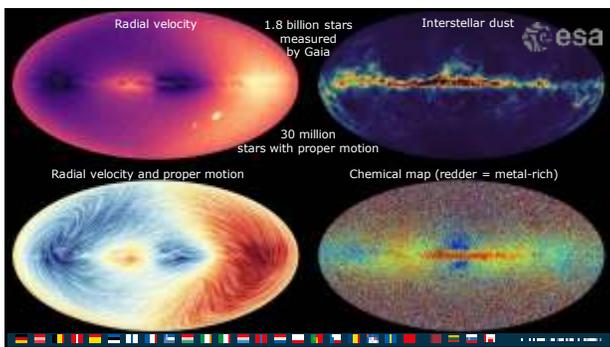
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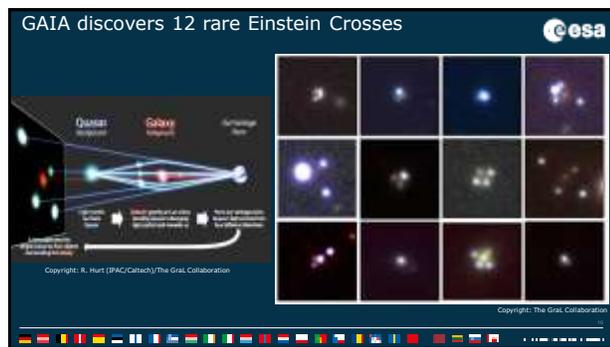
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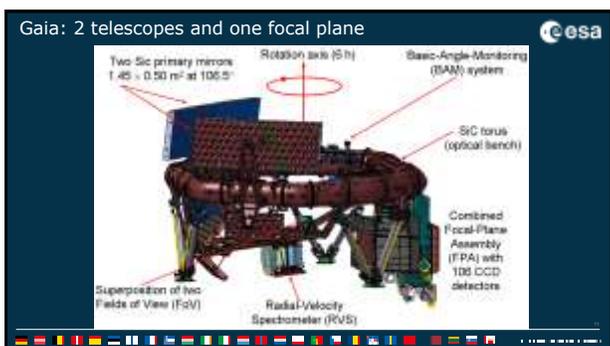
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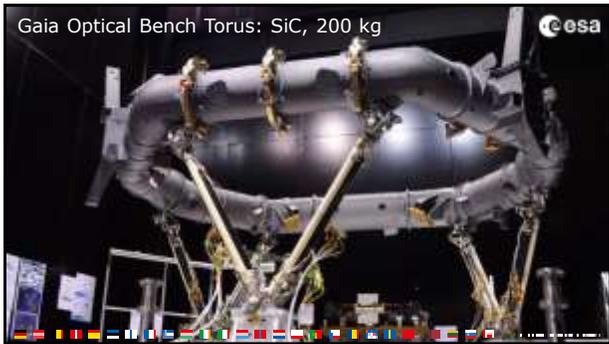
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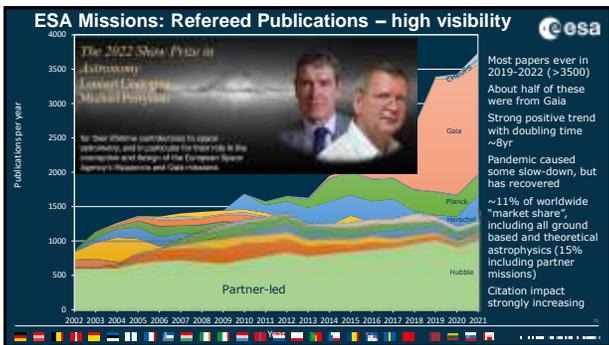
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The Science Programme Elements

Science Programme is part of mandatory activities: all Member States, pro rata to GNP
Science Programme budget \approx 560 M€ per year

Technical Excellence: Non-recurring spacecraft & high technology content
Science technology programme to develop technology maturity (TRL 6)

All science missions are in partnership with the Member States
National contributions to the payload and science ground segment
Consortium of scientific institutes /industry, from all Member States
Direct national funding or through ESA PRODEX programme
Scientific exploitation by the science community at large

Four types of missions (building blocks): Large missions, Medium missions, Fast (F-) missions, Missions of Opportunity
More on <https://sci.esa.int/>

The slide outlines the structure and funding of the ESA Science Programme. It states that the programme is mandatory for all member states, with a budget of approximately 560 million euros per year. It emphasizes technical excellence and the development of technology maturity (TRL 6). All science missions are in partnership with member states, involving national contributions to the payload and science ground segment, as well as direct national funding or through the ESA PRODEX programme. The slide also lists four types of missions: Large missions, Medium missions, Fast (F-) missions, and Missions of Opportunity. A link to the ESA Science Programme website is provided.

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The Science Programme Elements: L missions

Large missions: European-led flagship missions (Cost to ESA \approx 2 yearly budgets); one mission every 7-8 years.

L1: JUICE mission to Jovian system (in phase D, launch 2023)
L2: ATHENA X-ray observatory (re-formulation, launch late 2030s)
L3: LISA Gravitational Wave Mission (phase B1 starting, launch mid 2030s)

Optics technology driving LISA & Athena

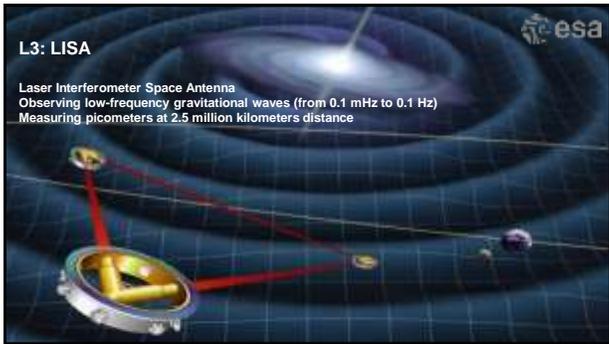
JUICE

ATHENA

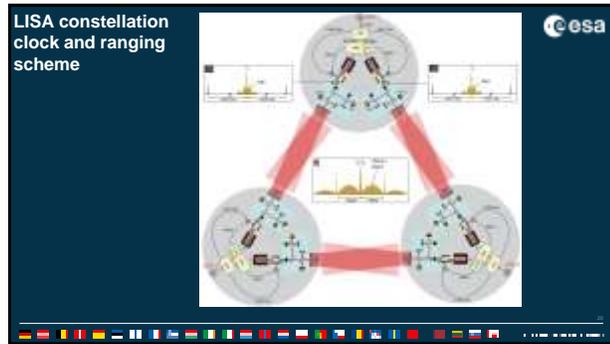
LISA

The slide focuses on Large Missions (L missions) within the ESA Science Programme. It defines them as European-led flagship missions with a cost to ESA of approximately two yearly budgets, occurring every 7-8 years. Three specific missions are listed: L1: JUICE mission to the Jovian system (in phase D, launch 2023); L2: ATHENA X-ray observatory (re-formulation, launch late 2030s); and L3: LISA Gravitational Wave Mission (phase B1 starting, launch mid 2030s). The slide also highlights that optics technology is driving the development of LISA and Athena. Images of the JUICE, ATHENA, and LISA spacecraft are shown.

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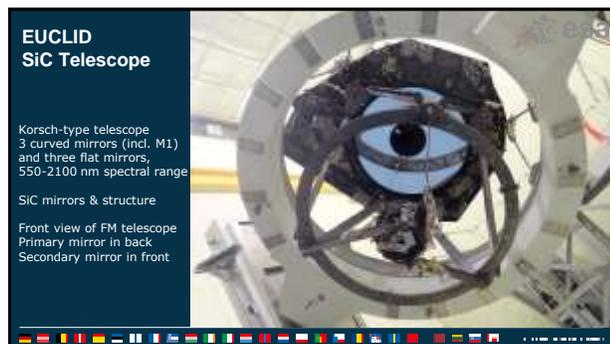
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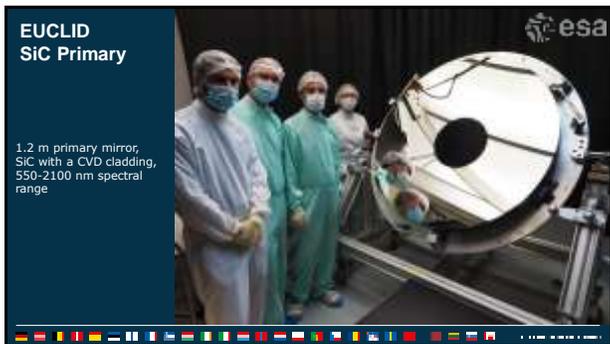
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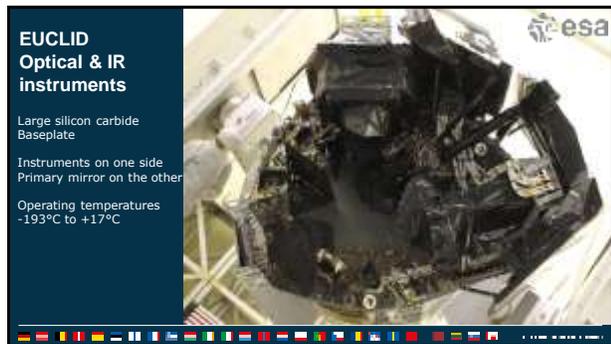
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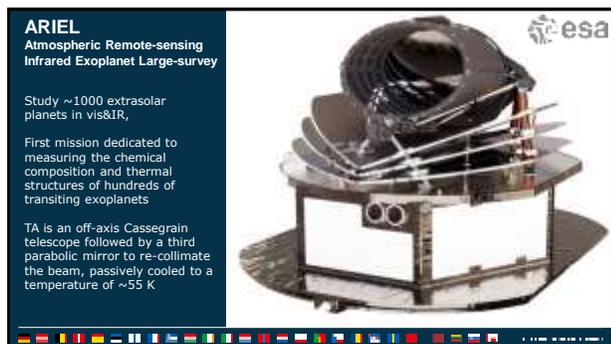
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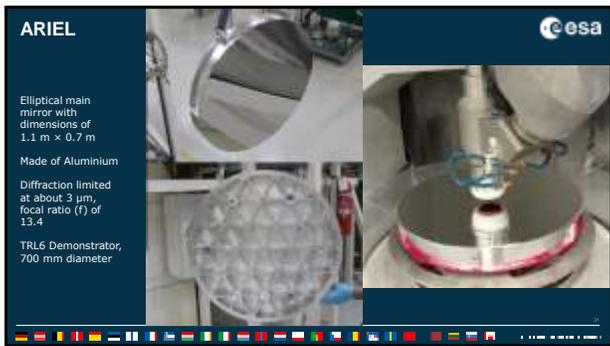
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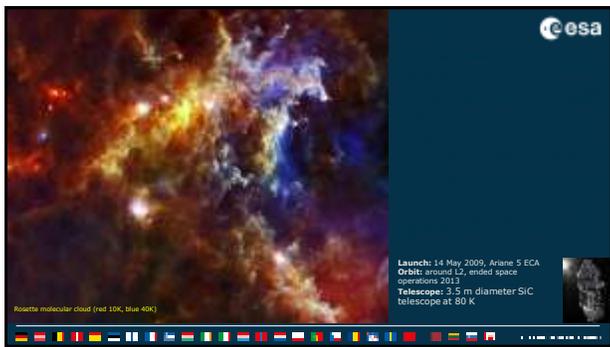
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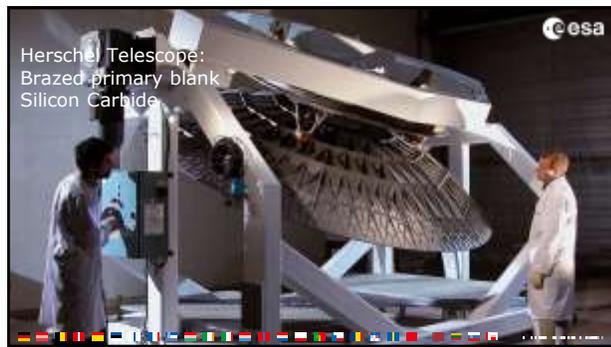
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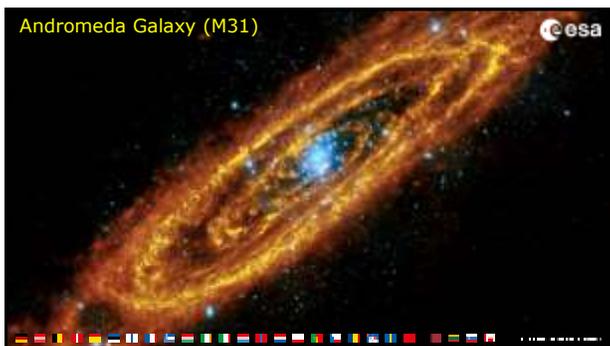
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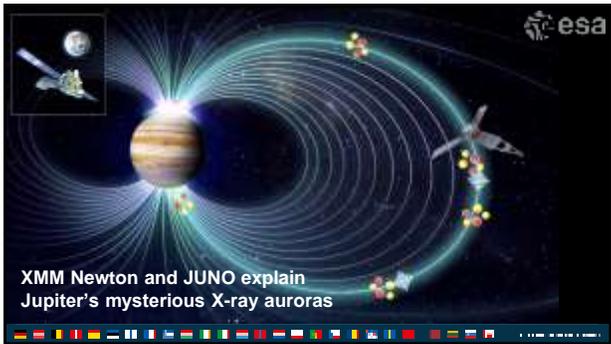
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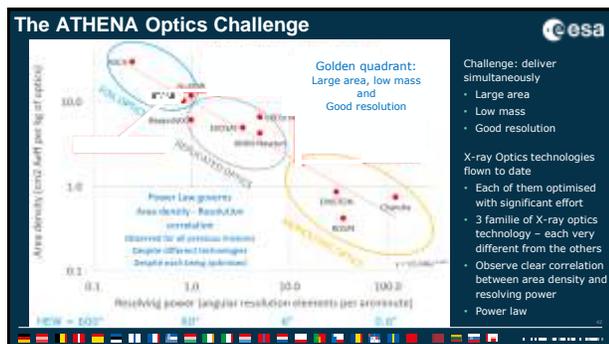
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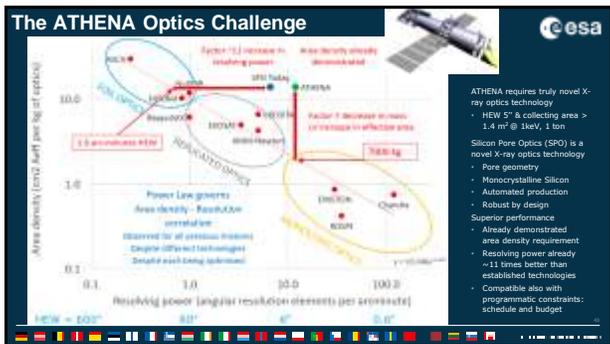
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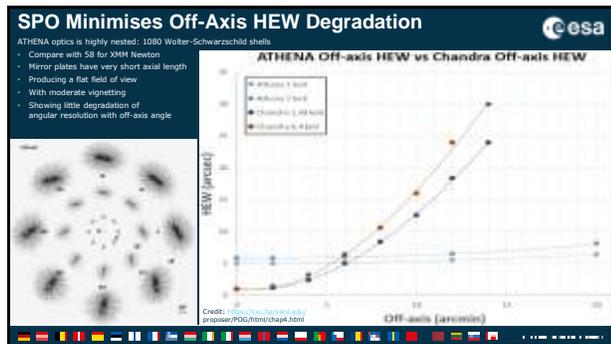
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