

German Instrument Funding and Related Issues

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- **all fundamental research is co-funding (approx. 50/50) by central federal resources and federal state contributions**
- **this includes**
 - ◆ **MPG with their institutes and MPG-internal rules for distributing the funding**
 - ◆ **“Helmholtz-Gemeinschaft” (applied research) funding of**
 - **DLR-institutes, Fraunhofer institutes, (supported also by industrial contract funding)**
 - ◆ **DFG (Deutsche Forschungsgemeinschaft ~ National Science Foundation) for university research (individual grants, coordinated research programs, ...)**
 - ◆ **approx 1/3 each**
- **university base funding (education) is federal state only**

- **national space program funds**
 - ◆ German contribution to ESA (for missions)
 - ◆ instrument co-funding is with national agencies (plus participating institute budgets)
 - ◆ GO time science exploitation is funded through “Verbundforschung Extraterrestik” under DLR/BO (but heavily under-funded)
 - ◆ PI science exploitation has to be funded through participating institutes
- **ground based astronomy**
 - ◆ under the responsibility of BMBF
 - ◆ university participation for instrumentation (ESO, ..) through “Verbundforschung bodengebundene Astronomie”
 - ◆ MPG/Helmholtz through their in-house funding
 - ◆ science exploitation through institute funding (universities → DFG)

History (to understand the background)

- **at the time, when SOFIA started (mid 90s)**
 - ◆ **former DvflR/BO (now DLR/BO) was DARA GmbH (privatized Corporation) (“era of privatization”, post Thatcher)**
 - ◆ **DARA administrated the national space program on behalf of the BMBF (Federal Ministry for Education and Research)**
 - ◆ **later (late 90s): reorganization, back to DLR**
- **astro-science community (by MoUs from individual institutions) agreed to fund the SOFIA instruments through in-house fund independent from national space program**
(this reflected the fact that SOFIA is neither space- nor ground-based)
 - ◆ **DFG agreed to support university funding applications as reserach enabling instrumentation**
- **at this time, space program and all other fundamental research funding coordinated through BMBF**

History (to understand the background)

- **around 2007 (due to federal election follow-up issues)**
 - ◆ **national space program funding transferred to BMWI (Federal Ministry for Economy)**
 - **Note: at this time, SOFIA was heavily delayed**
 - **former CRC 394 (GREAT development, UzK) was cancelled because of SOFIA delays**
 - **when SOFIA started science (2010)**
 - ◆ **issue of GO time support by science instrument teams**
 - ◆ **large overhead in instrument costs due airworthiness certification**
- were identified as a problem**
- **DLR/BO & BMWI expressed their interpretation of the former agreement:**
 - ◆ **national space program only funds SOFIA operations**
 - ◆ **science usage is matter of BMBF funding**
 - **BMBF expressed their interpretation**
 - ◆ **transfer of space program funding also included responsibility for science usage**

- **intensive negotiations in 2011 – 2013 resulted in almost agreeing on a proper compromise**
 - ◆ depending on number of German instruments, 1 to 2 Mio€ needed to support GO support by instrument teams and extra instrument costs
- **SOFIA “cancellation” on US side and subsequent change in NASA senior review scheme have stalled further discussions**
- **by now, other issues have come-up in observatory operations funding (SKA, CTA, ...) and outside astronomy**
 - ◆ SOFIA is part of that “problem list”
- **German “decadal report” (Denkschrift) is well under way**
 - ◆ expresses clear support for SOFIA by the community
 - ◆ recommends re-organisation of the funding infrastructure towards an additional scheme of “operations funding” support of consortia of universities and other research institutes
- **in the meantime, DLR “silently” supported the German instrument teams for upgrades and GO support (both FIFI-LS and GREAT)**
 - ◆ negotiations for extension until end of present MoU under way
- **long term solution pending on post-Denkschrift negotiations**

perspectives for GREAT/upGREAT/4GREAT

- fully exploit new 4GREAT extension
- possible upgrade of HFA ([OI] 63 um) to 2x7 pixel
 - ◆ NOT funded at present
- ?????

perspectives for other future German instruments

- ?????