

## WG14 N3337

### Meeting notes

## C Floating Point Study Group Teleconference

2024/08/14: 8 AM PDT / 11 AM EDT / 3 PM UTC

**Attendees:** Rajan, Jim, Jerome, Fred, Damian, Joshua, David

**New agenda items** (<https://wiki.edg.com/pub/CFP/WebHome/n3310.pdf>):

None.

**Previous meeting notes:**

See [CFP 3309] (<https://wiki.edg.com/pub/CFP/WebHome/n3309.pdf>).

**Next Meeting(s):**

September 18, 2024, 3PM UTC

ISO Zoom teleconference

Please notify the group if this time slot does not work.

**Carry-over action items:**

Damian: Ask 754 about midpoint and interpolation

Jim: Include complex add and sub into the main body.

Jim & everyone: Look at ways to strengthen the complex \* and /, given the current code block.

Jim: Write up notes about frexp() and behavior for model numbers

[Cfp-interest 3154] frexp and double-double

Jim & everyone: Look at ways to strengthen the complex \* and /, given the current code block.

[Cfp-interest 3155] Specification of complex operators

**New action items:**

All: Investigate issue [Cfp-interest 3196] Fwd: [SC22WG14.26243] constexpr initialization seemingly can contain UB?I from email forwarded by Fred, involving a constant expression of the form 1.0/0.0, for example.

All: Investigate issue [Cfp-interest 3195] Fwd: [SC22WG14.26260] Can nan set errno? from an email forwarded by Fred, involving the possible setting of errno by the nan() functions.

Jim: Add 2 issues raised by Rajan regarding WG14

Jim: Add actions for group in short term.

Jim: Draft proposal to remove instances of imaginary lingering in draft.

Jerome: add document # to pole proposal.

Fred: investigate range error issue for llogb(), which differs from ilogb()

Jerome: Identify fadd/fsub and fma "error may occur" issues and report.

Damian: Send email about sign conventions in Annex F & G proposal.

Damian & Jerome: Identify technical changes in the F & G proposal. Investigate ways to split the proposal into natural subsets.

Fred: Revise the proposal for SIGFPE and I/O, in light of further discussion

**IEEE 754 liaison:**

The working group has started business. The issue of complex has come up, so this group will follow that discussion.

**C++ liaison:**

Will get to midpoint & interpolation in the action items (eventually)

**WG14 meeting:**

30 Sept - 4 Oct in Minneapolis, MN

**C23 integration:**

Next WG14 meeting:

September 30, Minneapolis. Mailing deadline is one month before the meeting.

**C23 drafts:**

C23 DIS draft is 3219 - 22 Feb 2024

**C2y drafts:**

The working draft is n3301 - 28 July 2024 - For CFP review only. Do not distribute.

Rajan: no need to update existing proposals based on earlier drafts until notified by WG14.

**Action items from last meeting:**

Jim: As a preface to the work items, here are some comments about C as a 40-year-old standard. 750 pp. Huge number of changes from various sources, without ironclad editorial control. We have a chance to clean up odd problems while dealing with more complicated issues. There is worry that we're missing some of the big issues while dealing with all the small ones.

Jerome, Jim: Draft proposal to new wording for pole error -- DONE

Jim: Next action is to get a document number and submit.

Jerome: Summarize the usage of "may occur" with regard to numerical "anomalies" -- DONE

Jim & Jerome: Discussed two anomalies uncovered in the review, which led to new actions.

Damian: Send the group a proposal about Annex F/G language re. number ranges, esp. with signed 0

Damian: F uses mathematical language and G uses less formal language to describe the exceptional cases. I worked to make them both internally consistent and consistent with with other. I did much "fussy" copyediting to make the language consistent. Using "integral x" for an fp value that has zero fraction part vs. "integer x" is one example.

Damian & Jerome: Question about lexicographical vs. topical order (see various log functions)

Damian: G.4.1p8 is the toughest one, keeping the special cases straight. Adding the formulas seems to help.

Jim: There are issues with the table of complex identities: (a) stated as library functions; (b) insufficient to explain Fred's hard-fought specs; (c) should the be here at all?

Damian: lots of discussion of  $\operatorname{csinh}(x + i \operatorname{INF})$  and the use of identities in sorting the signs of  $x$  and  $\operatorname{INF}$ . I tried to make all of the cases consistent.

Jim: Shall we continue as a proposal? Can it be broken into parts, say, with technical changes and various flavors of editorial changes?

Rajan: Should pursue this Separate tech from editorial changes.

David (cameo): Makes most sense from a standards committee perspective.

Rajan: More smaller proposals will be easier to sell to WG14

Rajan: Submit to WG14 this completed item: Fix the title in the proposal in CFP 3112. Base document as well from --DONE  
N3286 2024/06/23 Bhakta, Floating-point exceptions for macro replacements

Rajan: Submit to WG14 the proposal for initialization of SNANs, issue #20 -- DONE  
N3288 2024/07/19 Bhakta, Give consistent wording for SNAN initialization

Rajan: Action re. 3109, to fix the language of a NaN "delivered in the destination format, if available" -- DONE  
N3287 2024/06/23 Bhakta, Nonsensical Parenthetical

Jim: Submit proposal for decimal language to WG14 -- DONE  
N3291 2024/06/27 Thomas, Proposal for C2Y - Decimal floating-point number—misuse of term

Jim: Submit proposal for 60559 macro change -- DONE  
N3305 2024/08/05 Thomas, Proposal for C2Y - leftover dependency on WANT macro (updates N3304)

Fred: Write a proposal for SIGFPE being raised for exceptional conversion and I/O circumstances (being careful about raise())

Fred & Jim: Discuss wording and connection to errno. The spec can be removed from 7.12.

Rajan, etc.: A footnote would help, perhaps using content moved from 7.12.

#### **TS-4 and TS-5 revisions**

Jim: [Cfp-interest 3184] Updated draft TS's. Have stable subclause numbering in C23 to refer to. Can send off, if no objections by Tuesday 20 Aug 2024.

#### **C2y issues**

None.

#### **Other issues:**

None.

[Updates:

\* NAN macros --> nan().

\* Fleshed out two comments re. the SIGFPE discussion.

\* First item of action items from last meeting -- Removed my perhaps oversimplified statement of Jim's proposed process for dealing with changes to these longstanding issues.

-Jerome Coonen