

CFP Meeting

2026/05/13: 8:00 AM PDT/3:00 PM UTC

[Please submit proposed changes to these minutes to Jerome or to the group. Revision changes appear at the bottom.]

Zoom

Join from PC, Mac, Linux, iOS or Android:

<https://iso.zoom.us/j/9495503012?pwd=vHaKRZLdPqqyOkfDIPVblVgXblbzeY.1>

Attendees and introductions

Rajan Bhakta, Jerome Coonen, Damian McGuckin, Joshua Cranmer, David Hough, Ariel Burton, Guy Davidson

Approval of agenda

https://cfp-wiki.esi.com.au/pub/CFP/WebHome/CFP_agenda_20260513_V1.pdf

Previous meeting notes

<https://www.open-std.org/jtc1/sc22/wg14/www/docs/n3878.pdf> - 2026/04/15 Minutes

Study group logistics

Next meeting: 24 June 2026, 8:00 AM PDT/3:00 PM UTC

ISO Zoom teleconference

Group: Clang meets the 1st and 3rd Wed each month and 754 meets every other Wed, so there is plenty of potential for conflict. For now, we stick with the 3rd Wed in June, with possible updates to follow.

David: Mailman is undergoing revisions to old systems, but improving. Everything and everyone in this system is aging.

C documents

The latest C2Y draft is N3854 Mar. 2026 <https://www.open-std.org/jtc1/sc22/wg14/www/docs/n3854.pdf>

C23 has been published ISO/IEC 9899, available for purchase. <https://www.iso.org/standard/82075.html>

IEEE 754 update

Damian: New routines nextXXXX() are related to roundToOdd functionality. Wording changes related to rounding directions are underway, similar to what's happening here in C. They are considering removing "direction" from "rounding direction attributes". There is much new specification about the scope of error flags. A proposal to eliminate flags in favor of reporting via NaNs is under discussion. That proposal has led to further discussion about NaN payloads and propagation, especially narrowing and widening. There is some consideration of "decimal re-encoding".

Damian: Elaborating on the role of the WG14 liaison to P754R, any formal report to WG14 about P75, must be approved by the standards association. The relationship is not symmetric, that is, WG14 allows all good-faith contact with P754R about C and does not require quite so formal an arrangement.

WG14 update

Rajan: A few emails received this month are included in the discussion.

C++ liaison

Joshua: Week of 8 June at Mendel University in Brno, n Czechia? Guy is working on a paper of interest to this group.

Guy: There is interest in improving floating point in C++, which is good news.

TS-4 and TS-5 revisions

None

News

None

Carryover action items from last meeting

None

Action items from last meeting

Jerome: Submit the fromfp paper.

Done

Rajan & Jerome: Write a proposal to fix complex range bounds.

Done

Damian: Update Annex F proposal for discussion at next meeting.

Done

Discussion of issues

1. WG14: nexttoward has no exception to conversion

Rajan: Hubert sent email about nexttoward vs. nextafter, referring to the conversion of the 2nd parameter to the type of the return value of the function.

Damian: These functions are destined for deprecation; they are C-specific as an adjunct to the nextafter family, which has been deprecated in IEEE 754 since 2008. Nextafter, the original, keeps compatibility with 754-1985. (And subsequent to the meeting, Rajan observes the matter of language here. It is *arguments* that are converted to the type of the *parameter*, which simply persists in its defined type.)

Actions

2. WG14: Annex H and non-arithmetic interchange formats

Rajan: This pertains to H.11.4.1. The language suggests that if an implementation does not have nonarithmetic interchange types, then it doesn't have to implement any of the functions in H.11.4. That is not true, because H.11.4 includes strictly arithmetic conversions, too.

Group: Tries several proposed rewordings on the fly, before the clear direction is to assign an

Action.

3. **Annex F Special Cases**

Damian: Discusses changes suggested by Jim, based on recent C2Y changes. Notes changes to Table F2 related to fromfp. Much work on the paragraphs on infinities and NaNs, where changes had been fragmented. F.3 consolidates much

Challenge question for the group: Name a function that, given a quiet NaN argument, yields an exception.

Action

4. **Editorial issues in Table F.2**

Damian: This cleans up some language, using the general word “facilities” to encompass functions and other items. “Operations” is a related word, also used in its general sense.

Group: Note that FLT_RADIX is a macro with no argument, leading to some existential discussion about its status relative to the other “actions” in Table F.2.

Multiple actions, including to clean up F.3#1.

5. **convertFrom and SNaN potential work item**

Rajan & Damian: This item pertains to conversions of signaling NaNs and subtleties of literal “0.0”, which may take an algebraic sign. Responded to Jan, who’s happy. Closed.

6. **Editorial issues in 6.3.2.5**

Damian: This issue pertains to fine points of language in conversions between different floating types.

Rajan: This is not a good case for the WG14 English language study group, which is focused on the wording of incoming proposals..

7. **Usage of Floating Point**

Damian: This item is presented for general interest. There is no action. Closed.

8. **Hexadecimal literal enhancements**

Damian: Currently, a hex floating point literal must have a trailing exponent field. But the string conversion functions don’t require one. We expect 754 to change to make the exponent optional, leading to a change in C. Will act after 754 takes action.

9. **Sign of 0 for fromfp functions**

Jerome: This is submitted, thanks to Joseph who brought it up and to Rajan, who commented.

10. **Range bounds for math functions**

Rajan & Jerome: Have responded to helpful comments from Paul.

Damian: Be careful of the typography in the use of i.

Action

11. Totalorder changes

Damian: Reviews improved language for Annex F change for this operation.

Rajan: Can we remove the conjunction “and”, which has proved problematical in other contexts?

Action

12. Fromfp quantum exponent

Carry over

13. Floating direction in the standard

Damian: Setting the rounding direction is subject to the optimizer reordering code and misplacing the intended manipulation of rounding. We can’t guarantee that an optimizer won’t rearrange fesetround and fegetround.

Rajan: This is a WG14 issue, not a CFP action item.

14. Editorial issues F.2.2

Damian: This item pertains to functions like hypot, which can swallow NaNs. Fixed.

15. Editorial issues F.3, etc

Damian: This pertains to issues already covered. Done

16. Editorial issues F.10.1

Damian: This is the other of the two docs up for review.

Other issues

None

Adjournment

10:00 AM PDT

Action items to be carried over

None

New action items

Jerome: Sort out the alleged issues with nexttoward and nextafter. Report to CFP with CC to originator of the topic.

Fred: Please provide Jerome and Damian a brief background on nexttoward. In paper N321 from 2018, Fred refers to the example Hubert quoted in his email. Here is N2321:

<https://www.open-std.org/jtc1/sc22/wg14/www/docs/n2321.htm>

Rajan & Jerome: Propose improved wording in H.11.4.1

Group: For the June meeting, make a CONCERTED EFFORT to read and ponder Damian's reports on Annex F.

<https://cfp-wiki.esi.com.au/pub/CFP/WebHome/C2Y-F-Introduction-20260401.pdf>

<https://cfp-wiki.esi.com.au/pub/CFP/WebHome/C2Y-F-SpecialCases-20260401.pdf>

Damian: Suggest modification F.3#1 to tighten the language of "operations" and related terms.

Ariel: Find a footnote or other language re. FLT_RADIX not being an operation.

Damian: Incorporate Ariel's language about FLT_RADIX (in the action above) into the Annex F introduction.

Fred: Add discussion of conversion of floating types in 6.3.2.5, as an open issue.

<https://mailman.oakapple.net/pipermail/cfp-interest/2026-April/003915.html>

Rajan: Mention study in email 3903 to WG14.

<https://mailman.oakapple.net/pipermail/cfp-interest/2026-April/003919.html>

Rajan & Jerome: Review the range bounds proposal with attention to the typography of the imaginary unit i , and submit the proposal to WG14.

Damian: Propagate Rajan's "and" suggestion through the parallel cases to the total order case in the discussion. Also, use the 754 wording "total ordering".

Carryover discussion items

None

Signoff

Respectfully submitted.

-Jerome Coonen