### 欢迎第一次加入的伙伴(开会时请从下一页开始展示)

- 开放编辑, 直接点击 request for edit 然后在东亚时区群里at吴伟
- 如果没有找到自己的内容分类, 可以添加1-2页在最开始或中间
- 欢迎在开始的前5分钟进行自我介绍
- 日常八卦在东亚时区RISC-V双周同步微信群中,欢迎加入

# 东亚时区RISC-V双周会

2024年09月05日·第087次

https://github.com/cnrv/RISCV-East-Asia-Biweekly-Sync

Host: 顾钰

Organizer: PLCT Lab <u>plct-oss@iscas.ac.cn</u>

### 会议议程(15:00 - 16:00)

- 自我介绍、等待参会者接入、非技术话题八卦(没有的话就直接跳过)
- RVI 的更新和八卦(基本上跟东亚双周会群内消息同步)
- Unratified Specs 的参考实现进展
- 东亚地区小伙伴的项目更新
- 自由讨论

### RISC-V International 同步、全球开源社区八卦(陈逸轩)

- 香山高性能 RISC-V 处理器在 Hot Chips 2024 亮相
- Seeed Studio的reCamera 模块化人工智能相机采用SG2002 RISC-V 人工智能SoC, 支持可互换的图像传感器和底板
- DeepComputing 开放 SpacemIT K1 RISC-V Powered DC-ROMA RISC-V Pad II 平板电脑预售
- Geniatech 、sifive 参加 RVSC 2024 的新闻稿
- Jesse Taube 成功在 Hazard3 RISC-V 核的 Raspberry Pi RP2350 上运行 Linux
- Resiltech 和 Andes Technology 宣布合作为 Andes 汽车级 RISC-V 处理器 IP 提供先进的 STL 解决方案

明年的 RISC-V advocate 申请10.31截止, 想报名的小伙伴抓紧时间。 https://riscv.org/risc-v-advocates/

## RISC-V 韩语社区的同步与八卦

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## RISC-V 日语社区的同步与八卦

## RISC-V 俄语社区的同步与八卦

● 无更新

### RISC-V 德语社区的同步与八卦(罗云翔)

● DVCON EUROPE 2024年8月26日终稿提交确 认通知 <a href="https://dvcon-europe.org/">https://dvcon-europe.org/</a>



STMicroelectronics Joins Quintauris as Sixth Shareholder
 https://riscv.org/blog/2024/09/stmicroelectronics-joins-quintauris-as-sixth-shareholder/

 2024年8月29日 STMicroelectronics加入Quintauris GmbH(德国慕尼黑), 成 为其第六位股 东。其他股 东 Robert Bosch GmbH、Infineon Technologies AG、Nordic Semiconductor ASA、NXP® Semiconductors 和 Qualcomm Technologies, Inc.

- Synopsys 处理器 IP 峰会 <a href="https://www.synopsys.com/events/arc-processor-summit-2024.html">https://www.synopsys.com/events/arc-processor-summit-2024.html</a>
- 2024年9月5日 Synopsys 处理器 IP 峰会 <u>https://www.quintauris.eu/</u>
   Quintauris 如何为物联网和汽车应用提供 RISC-V 解决方案, 并分享对广泛的 RISC-V 生态系统及其商业采用的促进的见解



Synopsys Processor IP Summit 2024

 SPARKLE: A 1,024-Core/16,384-Thread Single FPGA Many-Core RISC-V Barrel Processor Overlay <a href="https://ieeexplore.ieee.org/document/10631123">https://ieeexplore.ieee.org/document/10631123</a>

R. B. Abdelhamid, V. Valek and D. Koch Heidefberg University, Germany
Published in: 2024 IEEE 35th International Conference on Application-specific Systems, Architectures and Processors (ASAP)
Date of Conference: 24-26 July 2024
Date Added to IEEE Xplore: 22 August 2024

## RISC-V 中国峰会进展(吴伟)

### RISC-V 学习资源汇总整理计划(汪辰)

### RISC-V GCC进展

● gcc近期合入了很多新的优化patch

```
https://gcc.gnu.org/git/?p=gcc.git;a=commit;h=eca320bfe340be2222ec9267bdb6021c7b387111
https://gcc.gnu.org/git/?p=gcc.git;a=commit;h=cbea72b265e4c9d1a595bd3ecd11b325021925d0
```

● 补齐了Zcmp缺失的两条cm. mv指令的支持

https://sourceware.org/git/?p=binutils-gdb.git;a=commit;h=ca2590d7804b4ea563eec6f1127ed17a00c30315

● 添加了Sifive VCIX状态寄存器的调用规范

https://github.com/riscv-non-isa/riscv-toolchain-conventions/pull/56

● 添加了CFP(control flow protection)的选项支持

https://github.com/riscv-non-isa/riscv-toolchain-conventions/pull/5
4

## Clang/LLVM 进展 (PLCT)

 [SelectionDAG] Scalarize binary ops of splats before legal types <a href="https://github.com/llvm/llvm-project/pull/100749">https://github.com/llvm/llvm-project/pull/100749</a>

分析tscv没有向量化的原因,提了一些issue

 [RISCV][clang] Failed to vectorize a[i] + b[CONSTANT] when a and b both in global struct #104596

https://github.com/llvm/llvm-project/issues/104596

## QEMU/Spike/Sail/ACT进展 (PLCT)

### V8 for RISC-V 更新(邱吉、陆亚涵)

#### Reviewing中:

5729672: [riscv] Enabling Maglev on RISC-V | <a href="https://chromium-review.googlesource.com/c/v8/v8/+/5729672">https://chromium-review.googlesource.com/c/v8/v8/+/5729672</a>

#### 上游更新:

- 1. 5810697: [riscv][wasm] Rename more "ref" to "implicit\_arg" | https://chromium-review.googlesource.com/c/v8/v8/+/5810697
- 2. 5810698: [riscv][wasm] Refactor central stack switches | https://chromium-review.googlesource.com/c/v8/v8/+/5810698
- 3. 5811633: [riscv][turboshaft] Properly handle UncompressedTagged representations in ISel | https://chromium-review.googlesource.com/c/v8/v8/+/5811633
- 4. 5815536: [riscv] Implement simd in turboshaft | <a href="https://chromium-review.googlesource.com/c/v8/v8/+/5815536">https://chromium-review.googlesource.com/c/v8/v8/+/5815536</a>
- 5. 5825773: [riscv][wasm] Growable stacks for Liftoff | <a href="https://chromium-review.googlesource.com/c/v8/v8/+/5825773">https://chromium-review.googlesource.com/c/v8/v8/+/5825773</a>
- 6. 5825776: [riscv64][android] fix build error for android | <a href="https://chromium-review.googlesource.com/c/v8/v8/+/5825776">https://chromium-review.googlesource.com/c/v8/v8/+/5825776</a>
- 7. 5827470: [riscv] Implement Turboshaft | https://chromium-review.googlesource.com/c/v8/v8/+/5827470
- 8. 5834957: [riscv] Fix scratch incorrect use. | <a href="https://chromium-review.googlesource.com/c/v8/v8/+/5834957">https://chromium-review.googlesource.com/c/v8/v8/+/5834957</a>
- 9. 5836002: [riscv] Fix rv32 build failed | <a href="https://chromium-review.googlesource.com/c/v8/v8/+/5836002">https://chromium-review.googlesource.com/c/v8/v8/+/5836002</a>
- 10. 5822926: [riscv64][codegen] fix CompareTaggedAndBranch for compressed pointers | <a href="https://chromium-review.googlesource.com/c/v8/v8/+/5822926">https://chromium-review.googlesource.com/c/v8/v8/+/5822926</a>
- 11. 5836003: [riscv] Implement SIMD Turboshaft | https://chromium-review.googlesource.com/c/v8/v8/+/5836003

Spidermonkey for RISC-V更新(邱吉、陆亚涵)

## OpenJDK for RISC-V 更新(RV64) 杨飞

- 1. Authored/Co-authored JDK-mainline PRs:
- https://github.com/openidk/jdk/pull/20412 (8337396: Cleanup usage of ExternalAddess)
- https://github.com/openidk/idk/pull/20769 (8339248: RISC-V: Remove li64 macro assembler routine and related code)

#### 2. Reviewed JDK-mainline PRs:

- https://github.com/openidk/idk/pull/19785 (8334505: RISC-V: Several tests fail when MaxVectorSize does not match VM Version:: initial vector length)
- https://github.com/openidk/idk/pull/19830 (8334397: RISC-V: verify perf of ReverseBytesS/US)
- https://github.com/openidk/idk/pull/19825 (8334554: RISC-V: verify & fix perf of string comparison)
- https://github.com/openidk/jdk/pull/19852 (8334843: RISC-V: Fix wraparound checking for r array index in lookup secondary supers table slow path)
- https://github.com/openidk/jdk/pull/19974 (8335411: RISC-V: Optimize encode heap oop when oop is not null)
- https://github.com/openidk/idk/pull/19960 (8334999: RISC-V: implement AES single block encryption/decryption intrinsics)
- https://github.com/openidk/idk/pull/20004 (8335615: Clean up left-overs from 8317721)
- https://github.com/openjdk/jdk/pull/20298 (8335191: RISC-V: verify perf of chacha20)
- https://github.com/openidk/idk/pull/20386 (8337421: RISC-V: client VM build failure after JDK-8335191)
- https://qithub.com/openidk/jdk/pull/19973 (8314125: RISC-V: implement Base64 intrinsic encoding)
- https://github.com/openidk/jdk/pull/20417 (8337654: Relocate uncommon trap stub from SharedRuntime to OptoRuntime)
- https://github.com/openjdk/jdk/pull/20449 (8337780: RISC-V: C2: Change C calling convention for sp to NS)
- 3. Porting and debugging of virtual thread pinning issue on RISC-V
- Development repo: https://github.com/RealFYang/loom/tree/monitors-riscv-port
- Commits: <a href="https://github.com/openjdk/loom/compare/fibers...RealFYang:loom:monitors-riscv-port">https://github.com/openjdk/loom/compare/fibers...RealFYang:loom:monitors-riscv-port</a>
- Testing: All virtual thread tests passed in interpreter and C1 & C2 JIT mode: make test TEST="hotspot\_loom jdk\_loom"
- TODO: Propose PR to merge RISC-V specific code changes into project loom repo
- 4. Prepare for the OpenJDK talk at the 4th RISC-V Summit China.

## OpenJDK for RISC-V 更新(RV32G移植相关工作)曹贵

JDK RV64:

JDK RV32:

## RuyiSDK (Yu Gu, PLCT)

- 官网:<u>ruyisdk.orq</u>
  - 新增 algolia search, 现在可以便捷地搜索网站上的任何内容啦!
- RuyiSDK V0.17
  - 修复了 issue #181: Markdown 代码块中的长行会缺字
  - 软件源的更新
    - 更新了 Box64 到上游最新开发版本。
    - 更新了 WPS Office 到上游最新版本。
    - 明确了软件源内容的开源许可证: Apache 2.0 许可证, 与 Ruyi 包管理器本体一致。
- 操作系统支持矩阵
  - 修正了部分 typo 和 i18n / 英文翻译。
  - lintestor 应用软件可用性测试项目继续更新中
    - 重写了测试调度相关的代码
    - 添加了全局前置环境配置
    - 改进了测试结果报告
    - 新增了更多软件包的测试用例

## openEuler RISC-V (周嘉诚)

#### Status / 20240905

- Following releases in Q3'24
  - Late Sep. The next non-LTS release, 24.09
  - Late Q3 24.03 follow-up community release for supporting more devices w/ vendor kernels, proprietary drivers, etc.
  - Late Dec. 1st Service Pack of 24.03 LTS
- Major Updates
  - Someone of OpenXiangshan Nanhu v2
- Fundamental packages in 24.03 [Full List in Chinese]
  - o glibc 2.38, binutils 2.41, gcc 12.3.1, llvm 17.0.6
  - openjdk 8u402-b08 / 11.0.23 / 17.0.11 / 21.0.3
  - o python 3.11.6, perl 5.38.0
  - o golang 1.21.4, rust 1.77.0

#### Features:

- 6.6-based <u>common kernel</u> for Qemu,
   SG2042 (Pioneer) & TH1520 (LPi4A)
- UEFI-supported Hardware & QEMU images
- Penglai TEE-enabled firmware variants

#### Images:

- UEFI Install ISO for SG2042 (Pioneer)
  - Standard & Netinst variants available
- UEFI qcow2 Image w/ Penglai TEE
- Legacy-boot Images for Pioneer & LPi4A
- Other images coming in the next community release

### Gentoo for RISC-V 的情况更新(Gentoo 小队)

### Arch Linux RISC-V(潘瑞哲、Felix)

- [core] 260 / 266 (97.74%)
- [extra] 13464 / 13762 (97.83%)
- linux 6.9.4.arch1-1 --> 6.10.2.arch1-1
- glibc 2.39+r52+gf8e4623421-1.1 --> 2.40-1.1
- clang 17.0.6-2 --> 18.1.8-1
- rust 1:1.79.0-1 --> 1:1.80.0-1
- code 1.90.0-1 --> 1.91.1-1
- mesa 1:24.0.8-1 --> 1:24.1.5-1

#### chromium:

#### https://github.com/felixonmars/archriscv-packages/pull/4021

- Add two runtime\_api\_delegate patches from electron riscv fork to fix a new crash caused by chromium making a check fatal.
- V8 FTBFS with some errors regarding F16x8 and cherry-picking is hard, so v8 is bumped to last known good revision of riscv64(2b368def [riscv][wasm] Turboshaft hardware support for F16x8 FMA instructions)
- Revert the removal of some deprecated API to make it work with chromium 128

- box2d: Allow building Box2D on any architecture https://github.com/erincatto/box2d/pull/790
- CMake illegal inst on C906: 感谢 Revy 大师 <u>https://github.com/felixonmars/archriscv-packages/issues/3946#issuecomment-2329728369</u>
- mesa: OrcJIT patch merged
   <a href="https://github.com/felixonmars/archriscv-packages/pull/4046">https://github.com/felixonmars/archriscv-packages/pull/4046</a>
- pypy: riscv64 JIT backend supported by upstream https://github.com/felixonmars/archriscv-packages/i ssues/2351#issuecomment-2324612711
  - Ilvm18: bpo 2 commits for Ilvmpipe OrcJIT <a href="https://github.com/felixonmars/archriscv-packages/pull/4047">https://github.com/felixonmars/archriscv-packages/pull/4047</a>

### Fedora for RISC-V status update (20240905)

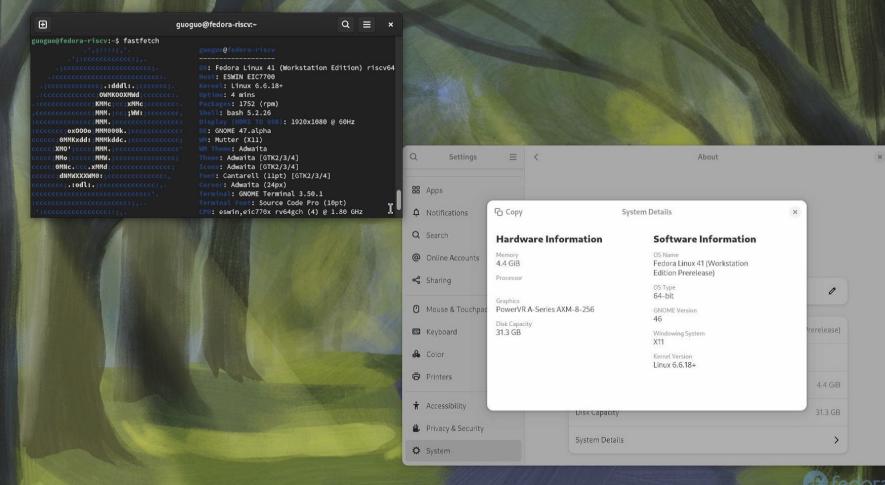
#### RPM packaging

- 。 Koji Status: **Rawhide(F41)** 
  - F39: <u>22465/22787 [98.59%] srpm [stop]</u>
- F40: <u>20165/23898[85.11%] srpm</u>
- Rawhide: 22221/23938[93.62%] srpm
- https://openkoji.iscas.ac.cn/pub/stats/

#### main package version:

- Toolchain: **gcc-14.0.1-0.15.3**, **glibc-2.39.9000-29**, binutils-2.42.50-18[up-to-date]
- o libffi-3.4.6-2(up-to-date)
- java-1.8.0-openjdk
- java-11-openjdk,java-17-openjdk,java-21-openjdk
- o java-latest-openjdk
- o perl-5.40.0-509(up-to-date)
- python3.13-3.13.0~b1-1.1(need update)
- Ilvm-18.1.7-1(up-to-date)
- o golang-1.22.4-4(up-to-date)
- o rust-1.80.0-2(up-to-date)

- Desktop support Fedora Rawhide:
  - DONE: XFCE/LXDE/LXQT/Cinnamon/Sway/Budgie /Sugar/GNOME/Mate
  - Testing:KDE/Deepin
  - Key Desktop App
    - o firefox-126.0-9[DONE]
    - o libreoffice-24.2.4.2-2[DONE]
    - Thunderbird-115.11.1-1[DONE]
    - chromium-126.0.6478.182-2[DONE]
- Image :
  - https://images.fedoravforce.com/
  - https://openkoji.iscas.ac.cn/pub/dist-repos/dl/
  - https://mirrors.iscas.ac.cn/fedora-riscv
- ROS/ROS2 upgraded to F41
- <u>Sail</u> for F40[UPSTREAMING]
- function testing for F41:
  - Podman[pass], Image: <u>fedora-rv64</u>(f41)
  - Ceph[ONGOING]
  - K8s[ONGOING]





## Fedora image support list

<u>JH7110</u>	<u>Mars</u>	GNOME	XFCE
	VisionFive V2	GNOME	XFCE
	DC-ROMA I	GNOME	XFCE
TH1520	Meles	GNOME	XFCE
	<u>LicheePi 4A</u>	GNOME	XFCE
	BeagleV Ahead	GNOME	XFCE
<u>K1/M1</u>	<u>Jupiter</u>	GNOME	XFCE
	LicheePi 3A	GNOME	XFCE
	Muse book	GNOME	XFCE
	MUSE N1	minimal	<u>CasaOS</u>
	Banana Pi BPI-F3	GNOME	XFCE
	DC-ROMA II	GNOME	XFCE
SG2042	<u>Pioneer</u>	GNOME	
<u>CV1800B</u>	<u>Duo</u>	minimal	
<u>SG2000</u>	<u>Duo-S</u>	minimal	
SG2002	<u>Duo 256M</u>	minimal	
	<u>LicheeRV Nano</u>	minimal	
SG2380	<u>Oasis</u>	GNOME	

EIC7700	EIC7700-EVB	XFCE	<u>GNOME</u>
	<u>LicheePi 5A</u>	GNOME	XFCE
	Megrez	GNOME	XFCE
	Unknown	GNOME	XFCE
<u>Nanhu</u>	NANHU_V2_DEV_BOAR D V01	GNOME(NVME)	GNOME(USB)
	RuyiBook	GNOME(NVME)	GNOME(USB)
<u>U740</u>	<u>Unmatched</u>	GNOME	XFCE



### Debian for RISC-V(于波)

- Official port update
  - 1. Docker Debian/Testing image on riscv64
  - 2. <u>libxml2</u> blocked lots of package migration
  - 3. kernel <u>6.10.7-1</u> build failed
- Debci
  - 1. apt-ng-proxy in experiment
  - 2. enbale out-of-box controller again
- Some works
  - 1. <a href="mailto:mesa">mesa</a>[enable orcjit closed], Unmatcehd[sid <a href="mailto:image">image</a>], onednn[<a href="mailto:patch">patch</a> for rv64], <a href="mailto:livm-18">llvm-18</a>
  - 2. sludge[fix test on rv64], lem[NEW], firefox[push gles]
  - 3. libmcrypt[<u>patch</u>], libmoe[<u>patch</u>], sitecopy[<u>patch</u>]

#### RevyOS (程龙灿)

- New image (20240819)
  - https://mirror.iscas.ac.cn/revyos/extra/images/sg2042/20240819/
  - Kernel version: 6.6.46
  - supported devices: Milk-V Pioneer / sg2042 evb / sg2042 evb2
  - O HDMI output:
  - https://github.com/revyos/revyos/issues/74
  - https://github.com/revyos/th1520-linux-kernel/tree/th1520-lts-wip

#### ROS2

- RevyOS maintains two ROS2 distributions: Humble and Jazzy.
- o jazzy build 1109/1185 (93%)
- o humble build 1406/1584 (88%)
- "Bullseye" changed to "Bookworm."
  - Progress: 200 packages left
- https://mirror.iscas.ac.cn/revyos/revyos-ros2/
- 2024 China Summit Live Demo

### RevyOS supported devices

#### Image download directory

- 1. LicheePi 4A
- 2. LicheePi Cluster 4A
- 3, beaglev-ahead
- 4. Milk-V Pioneer
- 5. Milk-V Meles
- 6. LicheeConsole4A
- 7, RISC-V Book
- 8. LicheeBook(New!)

#### SD card support

- 1, LicheePi 4A
- 2, beaglev-ahead
- 3, Milk-V Meles
- 4, LicheeConsole4A

#### Mainline support

1, LicheePi 4A

### FW相关更新 (王翔)

#### opensbi

- ➤ 移除sse inject out中未使用的参数
- ▶ 堆改进,添加多个堆内存快支持,添加指定内存付齐方式的堆申请,经过几次更新合并
- ➢ 移除csr检测时不必要的强制类型转换
- ➤ tor类型的pmp支持被拒绝,给代码带来复杂性和兼任性问题
- ➢ 添加SBI\_FWFT\_POINTER\_MASKING\_PMLEN的支持
- ➤ 对32位下物理内存地址检测添加一些限制,当前只支持G内存空间
- ➢ 添加zicfilp和zicfiss支持
- ➢ 编译连接选项添加移除未使用的代码和数据
- ➤ 修复DT中没有提供"cold-boot-harts"时引起的挂起
- ➢ 改进domain从数组修改为链表
- ➤ 修正设置time\_delta字长的问题
- ➤ 简化FDT头中大小端转换的代码
- ➤ 在模拟读取时钟寄存器时,添加检测当前特权等级对应的寄存器是否可读
- ➤ 优化hartindex, 把hartindex保存在scratch中减少转换
- ★ 优化mhartid和mscratch的读取
- ▶ 优化designware的gpio代码,修改静态数组为动态内存,在驱动未使用时可以节省内存
- ➤ 修正aclint\_mswi中错误把hartid当作hartindex使用的问题
- ➤ 修改makefile使libsbi.a与与平台无关
- ➣ 统一驱动冷启动的函数参数
- ➤ ipi驱动的管理从平台中移动到sbi core

## 固件相关更新(洛佳)

## RISCV性能跟踪小队 - 陈小欧

### 香山开源RISC-V处理器 - ICT / PCL

香山开源技术讨论群: 879550595 (QQ)

#### 功能

- 前端:
  - 修复 prefetchPipe s1 级状态机中软件预取相关转移的设计缺陷 (#3433)
  - 修复 Topdown 仿真计数器和硬件 PMU (#3437)
- 后端
  - 持续推进功能 Bug 修复, 共修复 30 余例 H 扩展、Debug 扩展、V 扩展功能相关的 Bug
  - 浮点加载常数和特殊偏序比较拓展 (Zfa) 正在合入主线 (#3439)
  - 支持 FP16 访存和数据类型转换 (Zfhmin) (#3421)
  - 支持 Sstval/Shvstval (非法指令异常时保存对应指令编码在 tval CSR 中) (#3407)
  - 可恢复非屏蔽中断(Smrnmi) 拓展正在合入主线 (#3480)
- 访存与缓存
  - 修复 LoadReplayQueue 无法入队, 导致 load 指令丢失的 Bug (#3436)
  - 添加 AXI4Error 外设, 使得仿真环境下 SoC 能够识别非法地址并返回 non-data error 给 CPU
  - 修复 store access fault 异常时 mtval 更新错误的 Bug (#3458)
  - 修复向量访存与非对齐访问相关的 Bug, 目前只有标量可以硬件处理非对齐, 向量仍然需要报异常由软件处理 (#3460)、(#3462)
  - 完成 CHI to AXI4 转接桥事务队列的设计实现, 实现五种事务的乱序策略, 正在完成办议层接口的实现。
  - 为 CHI 与 CLINT 异步桥添加开关, 可以在SoCParameters 中设置参数 (#3459)
  - CMO 指令拓展 Zicbom 合入主线(#3426)
  - 修复 48 位物理地址有关的Bug, 目前已经通过 48 位物理地址自测用例 (#3424)

#### 性能

- TP meta on L2 迁移至新 master. 进行性能评估
- 发现 load 发射队列频繁抢占失败带来的一系列性能Bug, 正在分析和修复

#### 时序

- 后端持续推进时序优化, 内部时序违例 -50ps, 距离目标 -15ps
- 后端移除 DataPath 中部分 loadCancel 信号 (#3457)
- 后端 v0,vl 寄存器堆写回信号改为寄存器直出(#3387)
  - 优化软件指令预取有关的时序 (#3425)
  - 继续修复 MemBlock 的关键路径,主要包括简化 DCache MSHR 入队逻辑、优化 LDU sO 的路径、打断长流水线(向量地址生成模块)的 ready 串联逻辑。准备合入主线 (#3467)

#### ● 面积

L2 Cache 上使用 SRAM 搭建 Queue, 对 data SRAM 进行拆分。时序评估正常, 面积有所优化, 功耗增加过多

## Chisel and Additional Technology / Sequencer

- T1
  - 使用Buddy支持了 lenet, mobilenet, tinyllama 等AI workload
- Chisel-Nix
  - https://github.com/chipsalliance/chisel-nix
  - 向社区提供了nix flake template

提交人不在线

## OpenHW & OpenHW Aisa Working Group

## ROCm bootstrapping for RISC-V (陆言, PLCT Tariser)

## 甲辰计划进展(吴伟)

## 自由讨论 / AOB

# **BACKUP**

## 准备加入更多的国际开源组织进行同步观测

欢迎追加或提议