

Q4 2022 Earnings Call

Company Participants

- David Rivas, Chief Technology Officer
- Dr Subodh K Kulkarni, President/CEO
- Jeffrey A Bertelsen, Chief Financial Officer

Other Participants

- David Williams, Analyst
- N Quinn Bolton, Analyst
- Unidentified Participant, Unidentified Speaker

Presentation

Operator

Thank you for standing by and welcome to the Rigetti Computing's Fourth Quarter and Full Year 2022 Financial Results Conference Call. At this time all participants are in a listen-only mode. After the speakers' presentation, there'll be a question-and-answer session. (Operator Instructions) As a reminder, today's call is being recorded. I would now turn the conference over to your host, Dr. Subodh Kulkarni, President, and CEO. Please go ahead.

Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Thank you, Valerie. Good afternoon, and thank you for participating in Rigetti's earnings conference call, covering the fourth quarter and full year 2022. Joining me today is Jeff Bertelsen from our CFO, who will review our results in some detail following my overview. Our CTO, David Rivas is also here to participate in the Q&A session. We will be pleased to answer your questions at the conclusion of our remarks.

We would like to point out that this call and Rigetti's Q4 and year-end press release contain forward-looking statements regarding current expectations, objectives, and underlying assumptions regarding our outlook and future operating results. These forward-looking statements are subject to a number of risks and uncertainties that could cause actual results to differ materially from those described and are discussed in more detail in our form 10-Q for the three and nine months ended September 30, 2022, and our subsequent filings with the SEC, including our form 10-K for the year ended December 31, 2022, and other filings with the Securities and Exchange Commission. We urge you to review these discussions of risk factors.

Turning now to the business of the fourth quarter of 2022, I would like to start by sharing a few words about myself and my thoughts on leading Rigetti, and the opportunity ahead

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of us now. My career for the past 30-plus years has been with the semiconductor industry, starting with IBM research and within an IBM fab, after completing my Masters and Ph.D. at MIT in Chemical Engineering. Later, I served as CEO for Prism Computational Sciences. For the past nine years, I have been CEO of CyberOptics, a semi-cab company that was successfully acquired by Nordson Corporation in November of 2022.

While quantum is a new world, the heart of the technical work is basically a semiconductor device. The fundamental principles that are used in semiconductors are the same in the quantum world. It centers on the interactions of the zeros and ones and the supporting of both states. That being said, quantum is a brand new way of doing computing that is mathematically more powerful than the way computing is currently done.

In my time here at Rigetti, I've found the team to be very passionate and technically impressive. Our mission is to build the world's most powerful computers to help solve humanity's most important and pressing problems. You don't get these kinds of chances that often. It has been about 50 years since there has been this type of opportunity where there is potentially a full paradigm change in the way information can be processed and problem solved. At Rigetti, our energy today is focused on fidelity.

The newest road map development relates to our next-generation qubit chip, known as Ankaa-1 84 qubit chip, with its new architecture of square lattice and tunable couplers, which is now deployed internally for testing. This chip is a leap forward in architectural design and is already showing superior performance compared with our prior generation 80 qubit Aspen M3 system based on our internal analysis, and initial performance demonstrates improved median 2-qubit fidelity and faster gate speeds compared to the Aspen M3 system. We will continue to work on to improve Ankaa-1 performance over the next few months with the goal to reach median 2-qubit fidelity of 98%, and anticipate making it available for select customers in mid-2023.

Ankaa-2 with anticipated improved design and further improvement in performance is expected to be deployed in Q4, 2023. Assuming we reach Ankaa-2 median 2-qubit fidelity of 99%, which we currently expect to reach in 2024, we plan to move to tiling 4 Ankaa chips to enable the 336-qubit Lyra system. We expect this milestone to enable vastly greater scale, and is a key and exciting step to bring Rigetti significantly closer to quantum advantage.

What we are doing is taking a single die and building a cell out of that with certain number of qubits arranged in a lattice. We are taking one or more of those dies and connecting them together. The critical issue to have happened there is, you have to have those two qubits on different dies communicate with each other. They have to entangle in the language of quantum mechanics. It's near neighbor electrons entangling with each other and photons entangling with each other across those dies. It's a non-trivial thing to do, yet we have done it. This ability to scale gets us out of the business of what we have been doing in the past, and what most of the rest of the industry and some in superconducting are doing, which is building larger and larger dies on entire wafers.

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As previously outlined, in 2023 and 2024, we will continue to focus on improving Ankaa performance, primarily in fidelity, and also other important metrics including gate speed and coherence time. Additionally, we continue to make good progress with our software stack. We believe we will be able to demonstrate narrow quantum advantage with significantly superior performance and cost over classical computing in two years to three years.

Notably, we believe we have already demonstrated in our labs the existence principle with median 2-qubit fidelity of 99.5% on a few qubits. We are now working on the important step of bringing our median averages to that level for all 84 qubits. This is a technical challenge for the entire industry, and we believe Rigetti's superconducting approach is optimal for users as they factor quantum advantage into their computing solutions.

Following the anticipated successful introduction of Lyra, we then plan to move to deeper commercialization initiatives within our strategic agenda. In terms of production and cost, right now, we are making a relatively small number of chips and using a small number of dilution refrigerators, but the cost to do so remains high. And the reward of doing so we believe, has the potential to be high as well.

Before we turn to our financial results, I want to be clear that our priority at the company for 2023 will be on technology and moving towards our goal of achieving narrow quantum advantage. As such, in the first quarter of 2023, we reduced our workforce to focus the organization and preserve our cash resources. We value the contributions of all our employees, and we thank them for the tremendous work we have done to help Rigetti reach this important point in time.

We've also brought on a new CFO, Jeff Bertelsen. Jeff and I have worked together for 9 years at CyberOptics, where he served as CFO and COO. Additionally, we are pleased to recognize David Rivas by promoting him to CTO. David is a technical leader at Rigetti who joined in 2019. Prior to expanding his role to CTO, he has been overseeing the engineering and operations of Rigetti's quantum cloud services platform. Prior to Rigetti, David held executive technical roles at companies, such as Nokia and Sun Microsystems. And with that, I'll turn the call over to Jeff, who will review our fourth quarter and full-year 2022 performance.

Jeffrey A Bertelsen {BIO 1983915 <GO>}

Thanks, Subodh. Revenues in the fourth quarter of 2022 were \$6.1 million compared to \$1.8 million in the same period in 2021. Revenue variability is to be expected at this stage of the company's evolution giving the nature of contract timing with major government agencies. Our development contracts also primarily consist of technical milestone-based work with revenue recognition varying according to the timing of deliverables. Gross margins in the fourth quarter of 2022 came in at 87% versus 62% in the same period in 2021. The year-over-year increase in gross margin was mainly driven by the timing of revenue recognition and the variable nature of our customer contracts.

On the expense side, total OpEx in the fourth quarter of 2022 was \$32 million compared to \$12.2 million in the same period the prior year. The year-over-year increase was mainly

due to our investment in research and development, a \$5.4 million goodwill impairment charge, as well as higher costs related to being a public company. In the fourth quarter of 2022, stock compensation expense totaled \$7.2 million and depreciation and amortization expense totaled \$2.2 million compared to \$375,000 and \$1.4 million in the fourth quarter of 2021.

The change in the fair value of the Ampere Warrant recorded through G&A expense in the fourth quarter of 2022 was a gain of \$300,000 compared to a gain of \$170,000 in the fourth quarter of 2021. Operating loss for the fourth quarter of 2022 was \$26.7 million compared to an operating loss of \$11.1 million for the same period of 2021. Net loss through the fourth quarter of 2022 was \$22.9 million or \$0.19 per share, compared to a net loss of \$14.1 million or \$0.61 per share for the same period of 2021. Cash, cash equivalents, and available-for-sale investments totaled \$142.8 million as of December 31, 2022, compared with \$11.7 million as of December 31, 2021.

As previously disclosed, in October 2021, we changed our year-end from January 31 to December 31, effective December 31, 2021. For the 12 months ending December 31, 2022, total revenues were \$13.1 million and the net loss was \$71.5 million or \$0.70 per share. For the eleven months ending December 31, 2021, total revenues were \$8.2 million and the net loss was \$38.2 million or \$1.64 per share. Full-year CapEx for 2022 was \$22.7 million.

In February 2023, the Board of Directors approved a reduction in workforce to align with the company's updated business strategy and revised technology roadmap. In the first quarter of 2023, we expect to incur restructuring charges of approximately \$1.4 million, primarily for severance payments and temporary healthcare coverage for employees with respect to eliminated positions. We anticipate having cash, cash equivalents, and available-for-sale investments of between \$65 million and \$75 million at the end of 2023.

At this time, we anticipate that we will need to raise additional funding by late 2024 or early 2025 to continue our research and development efforts, and achieve our business objectives based on our current business plans. At our current stage of development, we believe that executing toward our road map and achieving our technology milestones are key to fueling our goal of achieving quantum advantage. Our financial strategy is aligned with this view, and we remain focused on meeting our objectives. Thank you. We would now be happy to answer your questions.

Questions And Answers

Operator

Thank you (Operator Instructions) Our first question comes from the line of Sydney Ho of Deutsche Bank. Your line is open.

Q - Unidentified Participant

Good afternoon. Can you guys hear me?

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Yes, we can.

A - Jeffrey A Bertelsen {BIO 1983915 <GO>}

Yes.

Q - Unidentified Participant

Hi, good afternoon guys and thank you for taking my question. This is Zamarud Khan for Sydney. I guess my first question is on the technology roadmap, and Subodh, when we look at the new plan that you guys laid out, there is clearly a lot more focus on improving fidelities, before moving to a higher qubit count. But I guess my question is, how do you balance the focus on lowering error rates versus increasing number of qubits in order to maintain technological competitiveness?

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

It's a good question, and thanks for that question. Certainly, both are important, the total number of qubits and the quality of qubits long term, but in the short term, that means -- by that we mean 2023 and even part of 2024, where we were, we decided that fidelity was our shortcoming, if you will, for the time being. We know we have already taken 240 qubit chips and put them together, tile them together, if you will, to get our 80-qubit Aspen-M3 systems. So we know how to scale up fundamentally taking two different dies and stitching them together if you will.

But what we need to demonstrate is more than 99% 2-qubit fidelity across all of the qubits, and that we haven't done yet. We have in -- as I mentioned, we have in principle shown that we can get 99.5% 2-qubit fidelity on a few qubits, but not on the entire lattice. Quality of qubits right now is critical, in my opinion, across the whole industry, and this is not just a Rigetti statement. All of us need to improve the quality of qubits before we go up in just the number of qubits.

There are many experts in the industry who have also said that, if you could get near-perfect qubits, you can get a lot of computational power even with 40 qubits or 50 qubits. Certainly, with 84 qubits and very good fidelity, we think we can demonstrate narrow quantum advantage type of -- with some applications. Hope that answers your question.

Q - Unidentified Participant

Got it. That's very clear. Thank you so much. And then I guess my second question is on these cost-cutting measures that you announced in February -- earlier in February. I guess when we look at the new technology roadmap and these measures, should we expect any sort of impact to your industry partnerships that you announced last year? For example, the one with the Ampere or any of your DARPA contracts?

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

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Again, good question. We have -- already have several partnerships that we are working on including the one with Ampere that you mentioned. We have several partnerships with DoE and DoD Labs as well. We will continue to be engaged with our partners and seek more partners that make sense. We have laid out and defined our roadmap so long as the partnerships are consistent with the roadmaps we would be very happy to be, seeking new partners and staying with the current ones. If the partnerships are taking us in a different direction, we would choose to take different actions. But as of today, the partnerships we have in place, we feel very good about them and helping us accomplish our objective of narrow quantum advantage in the next two years to three years.

Q - Unidentified Participant

Got it. Okay. That makes sense. And I guess if I can squeeze one last one in. I guess if you could touch on sort of the level of engagement that you're seeing among your customers, given sort of like the tighter IT budgets. Meaning our customers still willing to adopt quantum systems and sort of explore the technology at this stage. Thank you.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Sure. So again good question. I mean, we certainly see a lot of interest from our customers including the ones who are using AWS as well as Azure and our own cloud platform. Having said that, certainly, this is -- we're still very much in the research stage of quantum computing. So the interest level from customers right now is to use our QPU for some research purposes. It's not really to try our QPU to for any commercial application where they will see a benefit with respect to our classical computation. So we are seeing very high interest and very high awareness of where we are and where we are going. I certainly anticipate that as we get our fidelity up to 98% later this year and 99% next year, the customer engagement will only continue to increase, because then they will be able to do more and more with those kinds of QPUs. So that expects customer engagement to increase. Right now, as I said, it's high but primarily for research purposes.

Q - Unidentified Participant

Thanks, guys.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Thank you.

Operator

Thank you. One moment, please. Our next question comes in the line of David Williams of Benchmark Company. Your line is open.

Q - David Williams {BIO 17572725 <GO>}

Hey, good afternoon, and thanks for taking the questions. So Subodh, I just wanted to touch briefly, but when we spoke last, I think -- I feel today that you're a lot more confident in just kind of talking about the roadmap and where you are. And just kind of curious if there's anything that's changed that gives you that more comfort is it because you've just had a chance more time with the technology? Because I think he felt that it was

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very solid, but it does feel like even some of the timelines that you and I had spoken about before, it feels like maybe some of that's a little more advanced now. So just kind of any color there would be very helpful.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Certainly. Thanks David for the question. Now, one thing that has certainly boosted my confidence and our team's confidence here is the internal deployment of our Ankaa-1 chip. When we talked last more than a month ago, we had not done that. In the month of March, we have successfully deployed our Ankaa-1 chip with its brand-new architecture of a square lattice and tunable couplers, and it is exactly doing what we expected it to do. I mean, we are seeing a significantly better median 2-qubit fidelity as well as significantly faster gate speeds. We have some challenges still left to work on in other metrics areas, and we obviously want to continue to improve fidelity and gate speeds from where we are. But the fact that our first out-of-the-gate brand-new architecture is working exactly as planned and getting us in the right direction, has certainly boosted my and our team's confidence. Hopefully, that answers your question.

Q - David Williams {BIO 17572725 <GO>}

Alright. That's very great color. Thanks so much for that. And then maybe just not on the philosophy, clearly, you've made some nice structural changes I think in the spend, and -- but I think just it'd be great to hear your philosophy, and how you're thinking about the road map. And then maybe just if you could touch on the employee morale just kind of given some of the structural changes that have been made within the employees.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Yes. Again, good question. The employee morale does tie with technical performance as you can imagine. Most of our employees are technical employees, and all of them are seeing the performance that I just reported, which is Ankaa-1 is internally deployed. We are getting better median 2-qubit fidelity than our Aspen system and faster gates and all our employees see that. That certainly excites employees because they see the goal is getting closer and more visible now. As we continue to improve fidelity, that will only continue to improve.

Regarding your question about the road map, as I stated, in -- simply put right now we want to focus on fidelity, we want to stay at 84-qubit with our Ankaa-1 chip, and continue to improve fidelity to get to 98% median 2-qubit fidelity by the end of this year, get to 99% sometime next year. Once we get there, then tile 4 Ankaa chips to get us the 336-qubit Lyra system. We feel pretty good about our ability to scale, because we have already done that once with our 40-qubit chip. We know exactly what is involved in tiling chips and making them communicate across each other. So we have to repeat that obviously with our 84-qubit chip. But once we get our fidelity to 99%, we think that is the right time to take on that challenge and through that, we can tile four 84-qubit chip into 336 qubit chip without losing any performance.

So road map simply is -- we have already deployed Ankaa-1 internally. Now, the roadmap is to continue to improve the fidelity to get it to 98% by the end of this year, 99% sometime next year, and then tile 4 Ankaa to get Lyra 336 qubit. In parallel, we continue

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to develop our software stack. We have already published some papers to show what kind of potential benefits one can see with QPUs. We'll continue to work more in that area. And the overall goal obviously, as I said in my statement, is to demonstrate narrow quantum advantage, which is significantly better performance or cost compared to classical computers in the next two to three years. So that is the overriding goal right now is to get nQA in the next two to three years.

Q - David Williams {BIO 17572725 <GO>}

Really great color, and thanks for the clarity there. And maybe just one last one for Jeff. If you kind of think about I guess on the OpEx side, you've given a target where you expect your cash balance to be. But can you give us kind of how we should be thinking about OpEx and how that trends, just given some of the restructuring has already taken place?

A - Jeffrey A Bertelsen {BIO 1983915 <GO>}

Yeah. I mean, great, great question, I mean, in terms of forward-looking guidance. I think this year we're really gonna be focused mainly on our year-end cash balance. Obviously, as -- I'm sure you know when we reduced headcount by a 50 people, they'll certainly be some savings there from the restructuring effort, and also we intend certainly to focus on our expense management and try to reduce expenses wherever possible without impacting our technology roadmap in those plans. But in terms of the forward-looking number, we're mainly focused on our year-end cash balance range that we gave today.

Q - David Williams {BIO 17572725 <GO>}

Okay, very helpful. Thanks again. Certainly appreciate it, and the best of luck on the quarter.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Thank you, David.

Operator

Thank you. One moment, please. Our next question comes from the line of Quinn Bolton of Needham & Company. Your line is open.

Q - N Quinn Bolton {BIO 3192909 <GO>}

Hey, guys. So congratulations on the fourth quarter revenue. I guess, Jeff, you just sort of touched on managing 2023 to that year-ending cash balance. But I guess, could you give us any sort of sense, revenue do you think that could grow in 2023? I know it's going to be lumpy around contract signings and milestone achievements. But with the change in strategy, does that change any of the milestones in previously signed contracts? And then, also CapEx, I think you said is \$22.7 million in 2023. Can you give us some sense what the CapEx might be in your initial plan for the year, understanding that things may change through the year and you're going to try to keep that cash and ended balance at \$65 million to \$75 million. But any thoughts you might have on CapEx would be helpful.

A - Jeffrey A Bertelsen {BIO 1983915 <GO>}

Sure. I mean, I don't know that given again where we're at in our evolution and our focus is on the technology roadmap on that same time, Subodh did touch on partnerships. I don't know that as of today, structurally anything will change significantly with our revenue one way or the other. Obviously, we're focused on it, and it's an important source of cash. So we'll continue to keep eyes on that and try to grow it wherever possible.

In terms of CapEx, we did invest \$22.7 million in CapEx last year. CapEx certainly is a key for us with our Fab operation. Just given the restructuring that we did and the focus on cash, we would expect to see some reduction in CapEx. I think that's fair, but we haven't put us -- we're not going to put a specific number on it from a guidance perspective. But I think in general with our focus on cash having fewer people directionally that's what I'd expect to see.

Q - N Quinn Bolton {BIO 3192909 <GO>}

Got it. And I guess just as you think about the technology roadmap now really prioritizing improving gate fidelities, do you have some flexibility in either OpEx or CapEx to the extent that revenue does decline? Or how much -- I guess how much flexibility do you have to managing to that \$65 million to \$75 million number to the extent you see fluctuations in the revenue line?

A - Jeffrey A Bertelsen {BIO 1983915 <GO>}

I mean, certainly, we did -- for the full year, we did \$13 million of revenue. But so certainly I think if there's any fluctuation, we certainly have the cash resources and the bandwidth to cover it. Again, our forecast is for \$65 million to \$75 million in revenue. So I think we've -- right now we're definitely amply funded to drive our goals and objectives for this year. I don't know Subodh if you would add anything.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Yeah, I was going to add some color to it, Jeff. So Quinn, I mean, as Jeff just said and I mentioned in my statement, so our focus will be on technical performance, particularly fidelity. Obviously, as Jeff said, if we can get more sales from our existing partners, like the DOE Labs or the DoD Labs, we would welcome that, because that's a good -- very good cash. But my overriding focus I've -- for the technical team is let's -- so long as the revenues come consistent with our overall technology goals, those are great revenues, and we would obviously pursue them. However, if the revenues come with strings attached, which are taking us away from our technology goals. So for instance, if somebody from the DOE Lab or some other commercial partner comes and wants us to do something that takes away from improving fidelity, we will say no to those revenues. Because we don't want to chase revenues at this point, these are all research contracts. We really want to get our fidelities up. We are playing this game for the long term. We believe getting fidelity is the most critical thing. Once we get there, then we can tile and get the scale up. So yes, revenues are important and we will obviously maximize as much as possible so long as they are consistent with our overall technology goal. So that helps answer that question.

Q - N Quinn Bolton {BIO 3192909 <GO>}

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Yes. No, it does. Thank you, Subodh. And I guess just sort of a technology question for you. Obviously, I think your decision to prioritize improving gate fidelity makes a lot of sense rather than just trying to build a device with the greatest number of qubits. I guess my question is, as you focus on improving qubit fidelity for Ankaa to 98% this year and 99% in 2024, do you think you'll be able to maintain that kind of qubit gate fidelity as you start to tile these Ankaa devices together. I know, you've shown the ability to take two tiles and place them together in Aspen, but that was at lower fidelity levels. And I'm just wondering if you've done any internal work today, trying to link Ankaa to maintain that higher 98%, 99% fidelity as you begin to tile these devices together, because I think that would be obviously the next key to scaling the technology.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

I mean, a terrific question, Quinn. Certainly, we know how, as you said, how to tile 240 qubit chips at lower fidelity without losing any performance. We have some basic work done which shows that we should be able to do the same with Ankaa with high fidelity. But that's mostly on a much smaller scale and simulation kind of work, because we don't have an Ankaa type chip at the 98% or 99% fidelity today. Our indications are that the tiling approach that we did for Aspen will work for Ankaa and we will not see any deterioration in performance. But we absolutely have to prove that next year once we start tiling to our 4 Ankaa chips with 99% 2 qubit fidelity. So there is some risk here, but we feel that risk is manageable and we feel that we have a good handle on that risk.

Q - N Quinn Bolton {BIO 3192909 <GO>}

Understood. Thank you.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Thank you, Quinn.

Operator

Thank you. One moment, please. Our next question comes from the line of Krish Sankar of Cowen your line is open.

Q - Unidentified Participant

Hey, guys. This is Eddie for Krish. Can you hear me?

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Yes, we can.

A - Jeffrey A Bertelsen {BIO 1983915 <GO>}

Yes.

Q - Unidentified Participant

Yes. Hey, Congrats on the new role. Nvidia at its GTC conference last week talked about the GPU for error correction and mentioned that it's working with you guys among other

quantum computer companies. Can you walk us through how the error correction process works, and what innings are we -- and how GPUs can accelerate the error correction mechanism for quantum computers?

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Well, certainly at a high level, both error mitigation and error correction are extremely important in the final computational performance. And we are looking at both those areas, albeit not as much as the fundamental chip performance and mixed layer in the stack, which is a control software and application software. Having said that, there's a lot of good work going on within the superconducting quantum computing companies in error corrections in other -- from other companies, and they are doing some pretty good work to show what exactly needs to happen with error correction.

I will say that all of us are critically dependent on high fidelity to begin with. So error correction today, when the median fidelities of our chips are sub-98%, is good work, nothing wrong with it, but it doesn't really pay any dividends to be doing error corrections when you are less than 98% median 2 qubit fidelities. To make error corrections work, you really need to be north of 99% median 2-qubit fidelity, ideally north of 99.5% or even higher before error correction makes sense. David is here with me, our CTO. David, do you have any thoughts about error corrections more than what I just said?

A - David Rivas {BIO 22740204 <GO>}

Well, the only thing I would add is that for error correction to take place, you need your underlying control systems to be capable of being programmed both to take measurements, all circuits are executing. But also to do what are fairly high-performance computations in tandem with them to evaluate the syndromes that are being produced on the system. So, one of the things that Rigetti has invested in early on is a highly capable control system capable of being augmented in such a way. This is something that -- while it's not unique in the industry, it is -- there's only a couple of us that are actually doing it.

Q - Unidentified Participant

Interesting, interesting. Thanks for that. And another one, when you stack more than four tiles together, does it get exponentially difficult to increase fidelity rates, or is it like the most difficult part is that vary with [ph] stages and once you establish that the technology work, it gets a bit easier, or maybe it doesn't get as hard as during the initial stages?

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

It does come down to the fundamental physics you're curious on how the electrons and photons tangle across the different dies. In our -- all the work we have done so far and including the current Aspen M3 system, we feel we have got the physics well understood. We have proven that you can entangle across chips without losing any performance. So clearly the fundamental principle is there, but I'm as I answered Quinn in the previous question, that we have demonstrated that with lower median 2-qubit fidelities. We absolutely have to prove that the same holds true with higher median 2-qubit fidelities when Ankaa is at the 99% level.

In all indications based on our work we have done so far with smaller qubits and simulation studies suggest that we should be able to get there, but we absolutely have to prove it next year. But the physics is sound that we can entangle across dyes, and that is the gist of our scale-up strategies to use the effectively a chiplet like philosophy that is commonly deployed in semiconductor industry today, but in the quantum world by using multiple dyes and tiling them together.

Q - Unidentified Participant

Got it. Thank you. Subodh. Thanks, Jeff. Good luck.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Thank you.

A - Jeffrey A Bertelsen {BIO 1983915 <GO>}

Thank you.

Operator

Thank you. I'm showing no further questions at this time. Let's turn the call back over to Subodh Kulkarni for any closing remarks.

A - Dr Subodh K Kulkarni {BIO 15225840 <GO>}

Thank you. In closing, we believe Rigetti has enormous potential and could contribute tremendous value as quantum computing potentially becomes mainstream between now and 2030. We believe quantum computing is probably one of the areas that can experience expansive growth in the next 5 years to 10 years. There's obviously risks involved in quantum computing. It's not for the faint of heart. But we feel very good and believe at Rigetti that it's a question of when, not if, and we believe the next decade is going to show that quantum computers will change the way we know the digital world today. Rigetti has an incredibly compelling approach. I'm excited to be part of the company, and I thank you for your interest and time. Thank you.

Operator

Thank you. Ladies and Gentlemen that concludes today's conference. Thank you all for participating. You may now disconnect. Have a great day.

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