Paper No. ___
Filed: April 11, 2018

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

APPLE INC.,
Petitioner,

v.

CALIFORNIA INSTITUTE OF TECHNOLOGY,
Patent Owner.

Case IPR2017-00700
Patent No. 7,421,032

PATENT OWNER'S SURREPLY

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I. INTRODUCTION

In view of new argument and evidence submitted in Petitioner's Reply briefing, the Board (Paper 43) authorized a short sur-reply but prohibited submission of rebuttal evidence. As illustrated in further detail below, the Reply materials are replete with untimely and improper new argument and evidence—including submission of newly generated experimental data, attorney-generated Tanner graphs and block diagrams, and a declaration from a new witness. The Reply provides no justification for replacing Dr. Davis with a new witness. Dr. Davis was aware of his Fulbright commitment since at least February 2017 and he testified he remains available for deposition in the U.S. EX1073, ¶3. Accordingly, the Reply materials should be disregarded and given no weight.

II. ARGUMENT

A. Petitioner's new argument that MacKay discloses nonuniform column weights for information bits should be rejected

As the POR explained, the petition failed to provide any evidence that MacKay discloses non-uniform column weights for information bits. POR 21-25. Having realized the flaws in its petition, Petitioner now relies on MacKay's Figures 5 and 6 to pivot to a new theory that MacKay discloses information bits appearing in a variable number of subsets. Reply 3-4. This is improper and should be rejected, not least because Caltech will not have an opportunity to rebut the argument with expert evidence. *Dell Inc. v. Acceleron, LLC*, 818 F.3d 1293, 1301

(Fed. Cir. 2016). Even then, Petitioner's new argument does not explain why Figures 5 and 6 would motivate a POSA to modify Ping's $\mathbf{H}^{\mathbf{d}}$ submatrix (they would not). MacKay presents Figures 5 and 6 as a way to achieve "fast encoding" by applying a "lower triangular structure" already found in Ping. EX1002 1453; EX1003 38. Moreover, MacKay's fast-encoding codes perform worse than the "ordinary-encoding codes" described earlier in the paper. EX1002, 1454, Fig. 7.

B. No motivation to combine Ping and MacKay

There is no motivation to modify Ping at least because its parity-check matrix is already irregular and MacKay does not teach selective application of uneven column weights to a submatrix. POR 23-25. The Reply's (6) response is that this argument should be rejected "for at least the reasons in the Petition and DI." But while the petition does not addres the fact that Ping's parity-check matrix is already irregular (see POR 29-30), the Reply (7) ***admits*** that Ping's parity-check matrix already has nonuniform column weights of, *e.g.*, 4, 2, and 1.

The Reply does not dispute that setting Ping's "t" value to 9 shows a parity-check matrix that is more irregular than MacKay's. Rather, the Reply (6) falsely asserts that this example is "contrived," but Caltech's example of $\mathbf{H}^{\mathbf{d}}$ having column weights 9 was based on ***Petitioner's proposal*** to use column weights of 3 and 9 for Ping's $\mathbf{H}^{\mathbf{d}}$. Pet. 42; *see also* EX2033 229:4-9 ("[A]ny positive integer is a possibility"). PO's example simply adopts one of the weights proposed by

Petitioner, while maintaining **H^d**'s uniform column weight, as instructed by Ping.

The Reply (7) absurdly asserts that it is improper to compare Ping's **H** matrix with MacKay's parity-check matrices. As Ping's **H** matrix is its parity-check matrix, it is the *only* thing properly compared with MacKay's parity-check matrices. **H^d** and **H^p** are indisputably *not* parity-check matrices. EX2033, 218:3-5.

The Reply (8) incorrectly asserts that the only way to obtain MacKay's benefits gained from nonuniform column weights is to modify **H^d**. The easiest way to obtain MacKay's nonuniform column weights is to *do nothing to Ping*, because Ping's parity-check matrix already has nonuniform column weights.

The Reply (8) argues its combination has met claim 11, which requires generating parity bits "in accordance with the following Tanner graph," because "parity check matrices and Tanner graphs are interchangeable." But that is not an argument made in the petition, nor does the petition make any attempt to compare a modified version of Ping with Claim 11's Tanner graph. The Reply (9) attempts to cure this defect by presenting for the first time purported Tanner graphs of Ping and MacKay (EX1048, 1049), but again fails to explain how its proposed modifications generate parity bits in accordance with Claim 11's Tanner graph as no comparison with Claim 11's Tanner graph is given.

These purported Tanner graph depictions of Ping and MacKay should also be rejected as untimely, discussed below in Section II.G. In addition, Petitioner's

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