OLE extension *from* **OT** extension

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joint work with
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OLE over GF(2^n) and $\mathbb{Z}_4$

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- A bijection from GF(2^n) × GF(2^n) to $\mathbb{Z}_4^n$:

$$\varphi(a,t) = f(a) + g(t)$$

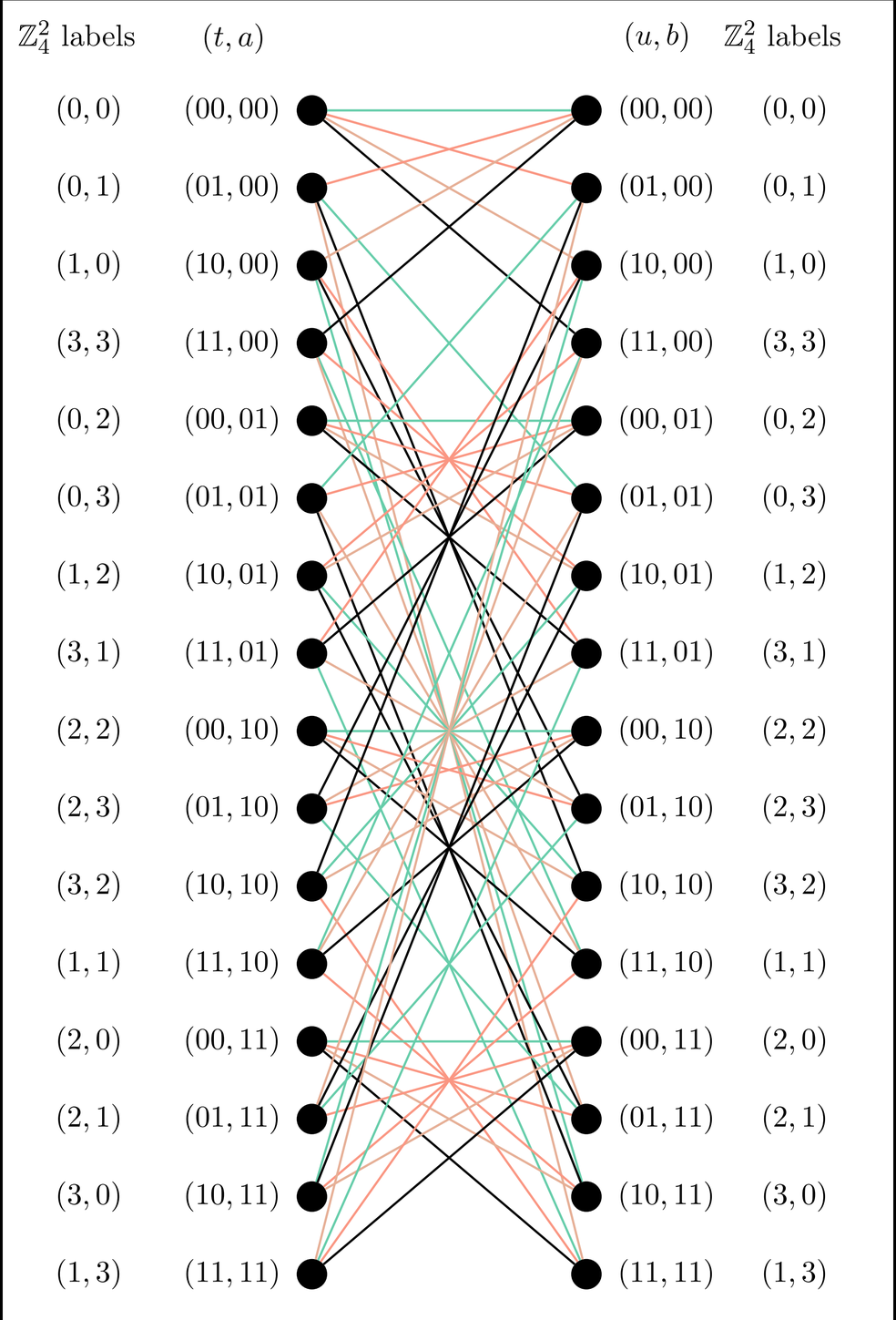
$$f, g : \mathrm{GF}(2^n) \longrightarrow \mathbb{Z}_4^n$$

$$f(x) = 2[\sqrt{x}]$$

$$g(x) + g(y) - g(x+y) = f(xy)$$

$$a+b = tu \iff \varphi(a,t) + \varphi(b,u) \in S$$

where $S = \{ g(x) \mid x \in \mathrm{GF}(2^n) \} \subseteq \mathbb{Z}_4^n$



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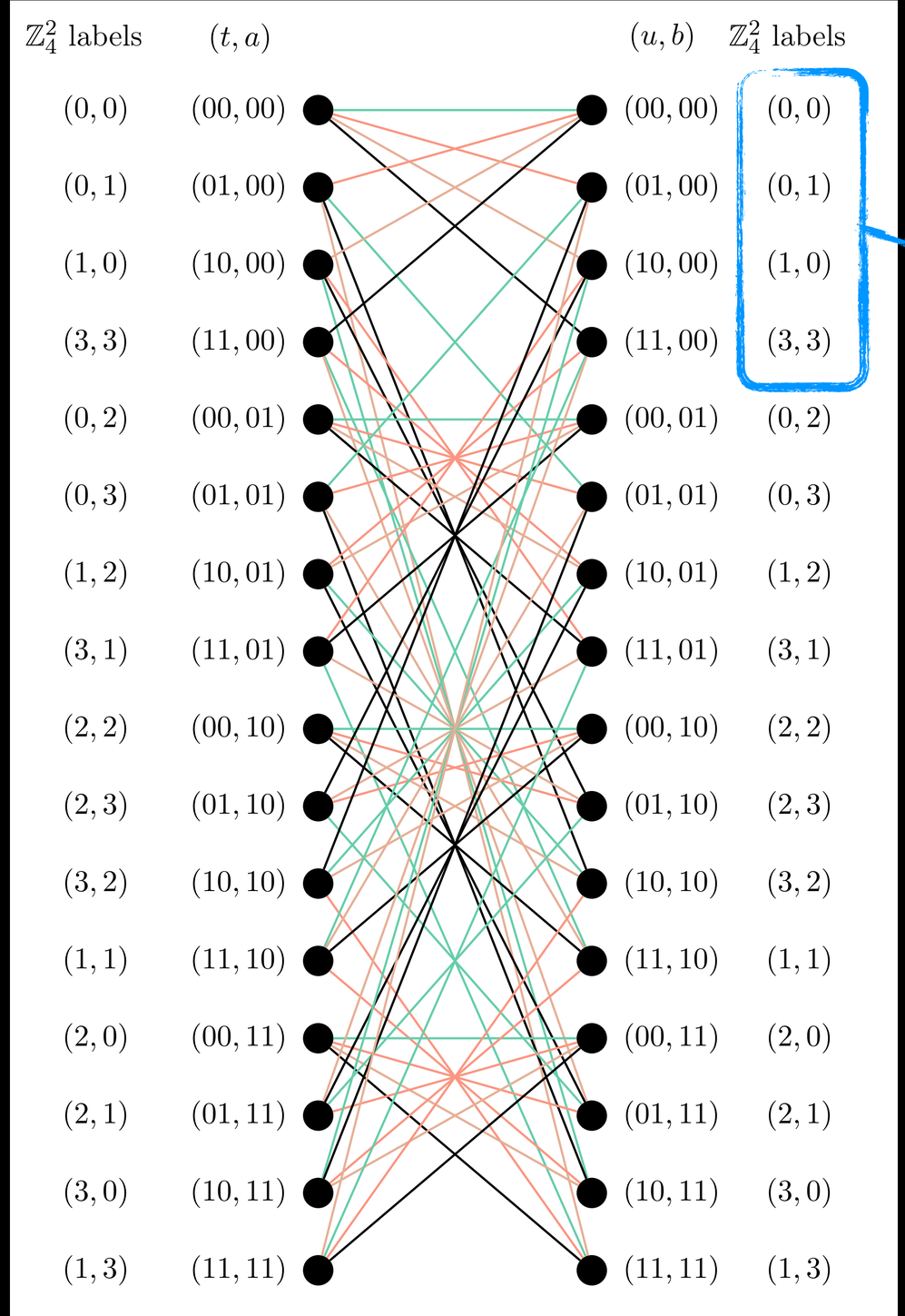

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Group Correlations: This and more

(Coming soon on eprint)

Bi-*affine* Correlations

- E.g., Bilinear correlations (like OT, OLE, vector OLE, Beaver's triples, ...)
- E.g., Alice gets (a_1, a_2), Bob gets (b_1, b_2) s.t. $a_1 + b_1 + a_2 + b_2 = 0$
- Generic 2-round protocols for random self-reduction, self-testing etc.

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