

**Repeat-Accumulate Codes [A Class of Turbo-like Codes that we can analyse]
August 3, 1999**

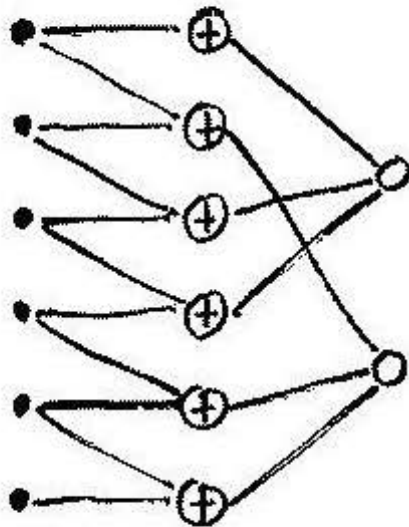
**A talk that was presented by Robert J. McEliece, an IMA Visitor from the California
Institute of Technology**

"Repeat-Accumulate" Codes

[A Class of Turbo-Like Codes that we
can analyze.]

Darush Divsalar } JPL
Sam Dolinar }

Hui Jin } Caltech
Bob McEliece }

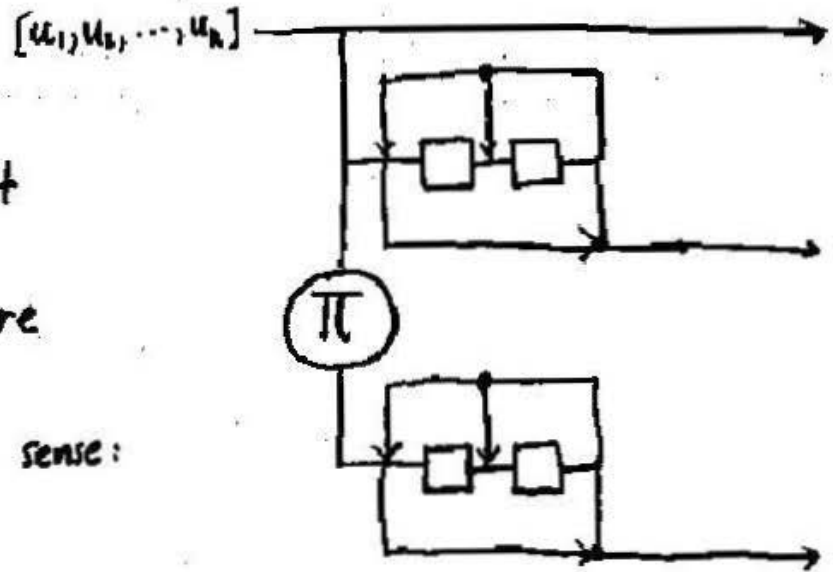


"Our life is frittered away by details... Simplify, simplify"

— H. D. Thoreau
Walden.

Motivation:

We wanted to prove that
classical turbo-codes⁽⁶⁾ are
"good," in the following sense:



Conjecture:

If $E_b/N_0 > \gamma_0^{(1)}$, then as $n \rightarrow \infty$,
the average⁽²⁾ maximum likelihood decoder bit error
probability $\rightarrow 0$.

⁽¹⁾ Necessarily, $\gamma_0 > -0.495$ dB (Shannon limit, for $R=1/2$ binary codes.)

⁽²⁾ Over all possible interleavers.

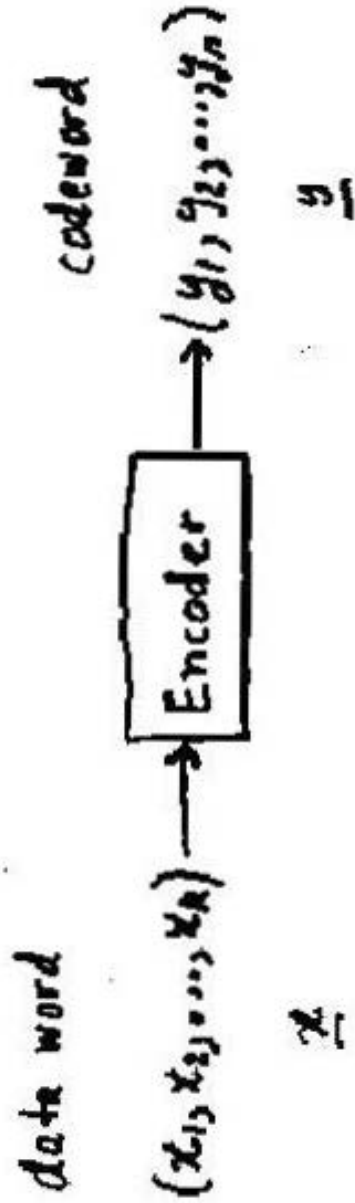
Proposed proof technique:

1. Input-Output Weight Enumerators

and

2. The Classical Union Bound.

1. Input-Output Weight Enumerators



$A_{n,h} \triangleq$ number of (\bar{x}, \bar{y}) pairs such that

$$|\bar{x}| = n, \quad |\bar{y}| = h$$



Hamming weight.

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.