

AN IHG° HOTEL

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Sum both sides over $B \in \mathbb{Z}$ (assuming for example,
that the support in by for any kixed it is finite) ?
of deln en & b(n, E)?
P(n, N) Z a(n, R) Z O
A coview i the operator P(1,N) may be not of
ninimal order (in N), reducible.
For example, when I a(n,b) admits a
different representation, I a (n, B) say.
Then P(n, N) and & tr, R) can be different from P(n, N)
whole & (n, R) is certainly different
For example, run on A(3)(n) = 5 (n)2/26)
For example, run on A(3)(n) z \(\frac{h}{k} \) (n)^2 (2k) to get PiP but different \(\frac{n}{k} \), \(\frac{a(n, k)}{a(n, k)} \)
Conclusion P(n,N) and its minimolity may depend
on the choice of a(n, k).
Our result with Armin Straub? (2022)
Theorem With the choice a(1, R) = (1)8
the order of minimal recursion for
$A^{(s)}(n)$ is at least $\lfloor \frac{s+1}{2} \rfloor$.

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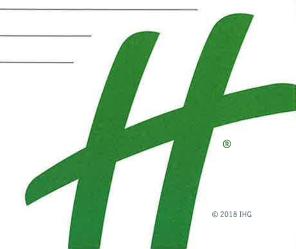


A bit of hisdorys
1997 M. Shell showed the upper bound [50]
for the reconstant for If (s) (n)
He uses estimates from linear Algebra,
but not creative telescoping
11) /~)- / / / / / / / / / / / / / / / / / /
(but his estimates also depend on representation
with a (n, k) z (n)s ()
20071 Yvan, Lo & Schmidt uses an Ingeneous
Congruence argument to give the lower bound
SO A SOLO SILO SILO SILO SOLO SOLO SOLO SOLO
32 for every A(s) (n) with siz
Nowadaysi for each fixed s, to show that
the operator is of minimal order, one
Uses available algorithme from compreter alsobre
By hand: up to 5220
Our result is for general s

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There is a different aspect of such recursions
There is a different aspect of such recursions of order 7,2: Apéry esmits.
It one choose two tonearey Andependent
So entrons of such a recursing Ala) and Blod So
Then a question of raterest is the einst
lin B(n) A(n)
Apépy (1978) used the reconston
(n+1)3 A(h+1) - (2n+1) (17n2+17n+5) A(n)+ n3 A(n-1) Zo
for A(n) = 2 (h)2 (nex)2 and another solution
B(n), B(o) 20, B(1) 26"
to show that lin B(n) = y(3),
In a recent paper, Chamberland & Stravb
Confectured that one can choose solutions
A(s) (n) pot the recursion for A(s) (n)
Such that A(n (n) z A(s) (n) and
en A(s)(n) is a retrord multiple of A
Ror J20, 1, -, [50]-1

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We confirm this observation by constructing as obassis of [Str.) independent Solutions based on aly k/2 (1) use spiny esposts In the main theorem The idea of constructing the independent quite simple: P(n, N) Q(n, R) 2 B(n, R+1) - B(n, R) Can be used not only for for a (n, p-t) where tell we obtain A (1) (1, t) Z The other words all coeffis The Per to with 125 have reconston A (1/2 f) is an even One Con check the bon-zero coeffly of there actually positive Holiday Inn AN **IHG**° HOTEL

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Finally, lin A (3) (n, t) z (Tt) s
$= 2\left(\frac{1}{2} \left(2 - \frac{1}{2^{2j-2}}\right) \frac{1}{2^{2j-2}} \frac{1}{2^{2j-2}}\right) \frac{1}{2^{2j-2}}$
$= \left(\frac{\sum_{i=1}^{\infty} \left(\frac{1}{2^{2j}} - 1 \right) \frac{\beta_{2j}}{(2j)!} \left(2 \pi i t \right)^{2j} \right)^{S}}{\left(2j \right)!}$
SHO [[x2 t2]]
Assume the the solutions $A_{i}^{(j)}(h)$ so constructed
because A(3) (n) & D YT n
Wrote 02 2 1 A, A; (n) 2-EQ
Drivide by Ao(s)(n) and take the limit as 1-10
but the powers of it are un Independent
Over P. (6)

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