

Re: 2 rings with a special property

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On Tue, 29 Jun 2004, Bessel wrote:

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- > *I want to find two rings R_1 , R_2 and a homomorphism $f: R_1 \rightarrow R_2$ between*
- > *the two rings. I need some special properties:*
- >
- > *1. R_1 should have many ideals*
- > *2. Kernel of f should not look too "special" in any way.*
- > *I.e. for example if we are dealing with matrices and the kernel of*
- > *homomorphism is such that last column or last row is all zeroes, then*
- > *it's not quite satisfactory because then it looks "special" as opposed*
- > *to other regular elements which don't have this 0s property.*
- > *3. I also would like $|\ker f|/|R_1|$ to be fairly small.*

>

identity: $\mathbb{Z} \rightarrow \mathbb{Z}$.

\mathbb{Z} has infinitely many ideals, kernel = $\{0\}$, $|\ker|/|\mathbb{Z}| = 0$

otherwise if division by $|R_1|$ is clue R_1 is finite

identity: $\mathbb{Z}_n \rightarrow \mathbb{Z}_n$

\mathbb{Z}_n has lots of ideals when n has lots of factors. Again

kernel = $\{0\}$ is most simple and $|\ker|/|\mathbb{Z}_n| \rightarrow 0$ as $n \rightarrow \infty$

> *Any suggestions of where to start?*

>

Plug the leaks in the problem statement?