

## Preview of rep embedding

Def rep embedding: <sup>①</sup> exact, <sup>②</sup> k-linear, <sup>③</sup> faithful, <sup>④</sup> , <sup>⑤</sup> pre-indecom, <sup>⑥</sup> ref iso  
 strict rep embedding: exact, k-linear, faithful, full, ~~pre-indecom~~, ~~ref iso~~  
<sup>②③④</sup>  $\Rightarrow$  <sup>⑤⑥</sup>    <sup>①②⑤</sup>  $\Rightarrow$  <sup>③</sup>

E.g. of strict rep emb:

1.  $\pi: A \rightarrow B$  in Comk  $\rightsquigarrow F_{B,A}^\pi: \text{Mod}(B) \rightarrow \text{Mod}(A)$

e.g.  $Q \subseteq Q'$   $\rightsquigarrow F^Q: \text{Rep}(Q) \rightarrow \text{Rep}(Q')$

$\pi: KQ' \rightarrow KQ$

$\parallel$   
 $F_{KQ', KQ}^\pi$

2.  $Q \rightsquigarrow Q^{k\pm}$   $\rightsquigarrow F^{k\pm}: \text{Rep}(Q) \rightarrow \text{Rep}(Q^{k\pm})$

Cor  $Q \rightsquigarrow Q^{bi}$   $\rightsquigarrow F^{bi}: \text{Rep}(Q) \rightarrow \text{Rep}(Q^{bi})$

e.g.  $F(n) \rightsquigarrow K(n+1)$   $\rightsquigarrow F^{bi}: \text{Mod}(F(n)) \rightarrow \text{Rep}(K(n+1))$

3.  $\text{Mod}(F(2)) \rightarrow \text{Rep}(1 \rightarrow 2 \Rightarrow 3)$   $\rightsquigarrow f \hookrightarrow M^2 \rightsquigarrow M \xrightarrow{\begin{pmatrix} f \\ g \end{pmatrix}} M^3 \xrightarrow{\begin{pmatrix} Id & 0 \\ 0 & Id \end{pmatrix}} M^2$

$\text{Mod}(K(3)) \rightarrow \text{Rep}(S(5))$



4.  $\text{Br}_{F(n), F(2)}: \text{Mod}(F(n)) \rightarrow \text{Mod}(F(2))$

Cor  $\text{Br}_{B, F(2)}: \text{Mod}(B) \rightarrow \text{Mod}(F(2))$  when  $B$  is fg.

5.  $C(\text{Mod}(F(J))) \rightarrow \text{Mod}(F(J'))$

6.  $F: \text{Rep}(K(n)) \rightarrow \text{Mod}(A)$  given 2 orthogonal bricks

Wild algebra: rep embed  $\text{mod}(F(2)) \rightarrow \text{mod}(A)$

The following implications are known: ?

$K(n)_{n \geq 3}, S(5)$

$1 \rightarrow 2 \Rightarrow 3$      $1 \rightarrow 2 \Rightarrow 2$

strictly wild  $\Longleftrightarrow$  endo wild

$K[x_1, x_2, x_3]/(x_1, x_2)$

$K[x_1, x_2]/(x_1^3, x_2^3)$

(1)

(2)

controlled wild  $\implies$  controlled endo wild

$K(2), K(1), S(4)$

wild

