

# Algorithmus 4.4: QR-Zerlegung

```
for k = 1 : (n - 1)
  s := 0
  for j = k : n
    | s := s + ajk2
  if s < c · u2 then „Matrix numerisch singulär“ stop.
  if akk ≥ 0 then α := -√s else α := √s.
  fack := s - αakk    (Es gilt fack = (vk⊤vk)/2 .)
  (vk)k := akk - α
  for j = (k + 1) : n, (vk)j := ajk, end;
  akk := α
  for i = (k + 1) : n
    t := 0
    for j = k : n
      | t := t + aji · (vk)j
    t := t / fack    (Es gilt t = 2  $\frac{v_k^\top a_{.i}}{v_k^\top v_k}$  .)
    for j = k : n
      | aji := aji - t · (vk)j
```

